March 2004

A First Look at a Modern Legal Regime for a "Post-Modern" United States Army Corps of Engineers

A. Dan Tarlock
IIT Chicago-Kent College of Law, dtarlock@kentlaw.iit.edu

A First Look at a Modern Legal Regime for a "Post-Modern" United States Army Corps of Engineers

A. Dan Tarlock[*]

I. THE CORPS, HYPER-RATIONALITY, AND THE RULE OF LAW

A. The Corps: The Very Model of a Modern Administrative Agency Under Stress

The United States Army Corps of Engineers' (the Corps) ability to apply rational methods of analysis to plan and build projects became a model for the hyper-rational administrative agency decisions that we have come to expect in environmental and safety standard setting.[1] From its initial organization during the Revolutionary War to the present, the Corps has combined military discipline with the practice of rigorous state-of-the-art engineering, hydrology, and economics to turn many of the nation's unruly rivers into tamed, working systems.[2] Today, the Corps' projects support commercial

* Distinguished Professor of Law, Chicago-Kent College of Law. A.B. 1962, LL.B. 1965 Stanford University. National Fellow, National Academies. This article grows out of my service between 2002–2004 on the National Research Council/National Academy of Sciences Coordinating Committee of the Committee to Assess the U.S. Army Corps of Engineers Methods of Analysis and Peer Review for Water Resources Planning. The final Coordinating Committee report, WATER RESOURCES PLANNING BY THE CORPS OF ENGINEERS: A NEW OPPORTUNITY FOR SERVICE, (2004), is published along with the reports of four other committees that deal with specific aspects of Corps policy and practice. The views (and errors of law, descriptions of Corps practice, or judgment) expressed in this article are solely those of the author and do not reflect the views of the NRC/NAS, the U.S. Army Corps of Engineers, or any members of the five committees. This article benefited greatly from opportunities to present it at faculty workshops at the Florida State University School of Law in October 2003, and the Dickinson School of Law of the Pennsylvania State University in April 2004, as well as at the 2004 Kansas University Law Review Symposium, *Reforming Environmental Law: Can Regulation Be More Adaptive?*, organized by Professors Sidney Shapiro and Robert Glicksman at the University of Kansas School of Law, March 4, 2004. A special note of thanks goes to Jon Zerger and the Kansas Law Review staff for their warm and efficient hospitality in Lawrence, on a Jayhawk basketball night no less.

1. In their important study of pollution and toxic level standard setting, RISK REGULATION AT RISK: RESTORING A PRAGMATIC APPROACH 10–24 (2003), Professors Shapiro and Glicksman trace and criticize the shift from pragmatic, bounded rationality to the search for perfect or hyper-rational environmental regulation in the form of front-end, cost-benefit analysis. Cost-benefit analysis is vigorously defended in CASS R. SUNSTEIN, RISK AND REASON: SAFETY, LAW AND THE ENVIRONMENT (2002).

2. *See, e.g.*, ROBERT KELLY SCHNEIDERS, UNRULY RIVER: TWO CENTURIES OF CHANGE ALONG THE MISSOURI 1 (1999).

navigation,[3] mitigate downstream flood damages,[4] generate hydroelectric power, store and deliver water supplies for rural and urban areas, and provide opportunities for water-based recreation.[5] The Corps also maintains deep water ports and attempts to stabilize coastal and inland beaches. Beyond these tangible achievements, the Corps was the first agency to use formal benefit-cost analysis in its decisions[6] and pioneered the use of the "best available science" and economics to define the public or national interest in resource management—a goal that remains at the heart of modern debates about the appropriate level of environmental regulation.[7]

This impressive legacy of water management has produced both substantial national benefits[8] and considerable, off-balance-sheet, long-ignored costs, such as the loss of riverine ecosystem services and the inefficient expenditure of public monies. With the end of the "golden age" of Big Dam construction in the United States,[9] the Corps now finds itself an agency under stress.[10] National values related to water have fundamentally shifted, and this shift also has precipitated a decline in the primacy of science and engineering to provide acceptable resource management options. We are now

---

3. The Corps' navigation support role is critically evaluated in NATIONAL RESEARCH COUNCIL, INLAND NAVIGATION SYSTEM PLANNING: THE UPPER MISSISSIPPI RIVER-ILLINOIS WATERWAY (2001).

4. Despite its formidable title, REPORT OF THE INTERAGENCY FLOOD PLAIN MANAGEMENT REVIEW COMMITTEE TO THE ADMINISTRATION FLOOD PLAIN MANAGEMENT TASK FORCE, SHARING THE CHALLENGE: FLOODPLAIN MANAGEMENT IN THE 21ST CENTURY (1994), which was charged with assessing ways to prevent the 1993 Upper Mississippi floods, is an excellent analysis of the Corps' flood control policy and alternative options. Two important critical histories of the Corps' flood control policies are ARTHUR E. MORGAN, DAMS AND OTHER DISASTERS: A CENTURY OF ARMY CORPS OF ENGINEERS IN CIVIL WORKS (1971), and JOHN M. BARRY, RISING TIDE: THE GREAT MISSISSIPPI FLOOD OF 1927 AND HOW IT CHANGED AMERICA (1997).

5. FINAL REPORT TO THE PRESIDENT AND TO THE CONGRESS OF THE UNITED STATES BY THE NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE 187–99 (1973), contains a good discussion of the use of Corps reservoirs for water-based recreation.

6. *See infra* text accompanying notes 50–57.

7. See David E. Adelman, *Scientific Activism and Restraint: The Interplay of Statistics, Judgment, and Procedure in Environmental Law*, 79 NOTRE DAME L. REV. 497 (2004), for a balanced analysis of the debate and constructive suggestions about the role of science in environmental regulation. Richard W. Parker, *Grading the Government*, 70 U. CHI. L. REV. 1345 (2003), is an important empirical study of the severe limitations of current efforts to assess the costs and benefits of pollution regulation.

8. WATER RESOURCES PLANNING BY THE CORPS OF ENGINEERS, *supra* introductory footnote.

9. See JOHN R. FERRELL, U.S. ARMY CORPS OF ENGINEERS, BIG DAM ERA: A LEGISLATIVE AND INSTITUTIONAL HISTORY OF THE PICK-SLOAN MISSOURI BASIN PROGRAM (U.S. Army Corps of Eng'rs. 1993), for a history of the largest dam building program entrusted to the Corps. The growing move away from large water resources projects is a world-wide trend, e.g. WORLD COMMISSION ON DAMS, DAMS AND DEVELOPMENT: A NEW FRAMEWORK FOR DEVELOPMENT (2000), although dam building is alive and well in places such as China.

10. For a summary of the current criticisms of the Corps, see WATER RESOURCES PLANNING BY THE CORPS OF ENGINEERS, *supra* note 8, at introductory footnote. Throughout its history, the agency has always faced opponents of its mission and methods, but the Corps was able to rely, as they can no longer, on a widespread consensus about the need to modify waterways and coastal systems. *See infra* Part III.

paying much more attention to mitigating and restoring the hydrologic regimes that the Corps changed than to planning new projects.[11] To complicate matters, this shift is occurring as the federal government is retreating from its historic role as the exclusive developer and manager of many of the nation's major rivers[12] and thus, a major guardian of the national interest in water resources.[13] Federal power is devolving, fragmenting and withering,[14] both vertically and horizontally.

The Corps is unlikely to wither away in the foreseeable future. In fact, the "post-modern" vision of the Corps is an agency whose primary mission is river and coastal ecosystem restoration and the management of its existing infrastructure. The two missions overlap because infrastructure management may be increasingly tied to its restoration mission.[15] To do this, the Corps must become "greener," bolder, and more experimental in its resource management,[16] which includes the more efficient and flexible management of its

11. William R. Jordan III argues that there have been three fundamental views of nature. The older, and still dominant view, is that nature is a commodity to be exploited for human benefit. The modern environmental movement adopted the view of nineteenth and early twentieth century thinkers, such as Thoreau and John Muir, believed that nature is sacred. Jordan argues that we must move to the view that humans and non-humans make up a dynamic community. WILLIAM R. JORDAN III, THE SUNFLOWER FOREST: ECOLOGICAL RESTORATION AND THE NEW COMMUNION WITH NATURE 28–30 (2003). Environmental restoration is a non-romantic means to allow humans to interact with others and redeem previous acts of unrestrained consumption. *Id.* at 72–73.

12. The Corps is the nation's oldest water resources agency. In the twentieth century, its monopoly was challenged in the West by the Bureau of Reclamation and in the Tennessee Valley by the Tennessee Valley Authority (TVA). However, the Corps managed to challenge the Bureau on its own turf and block its expansion outside of the Seventeen Reclamation Act states. The TVA was to be the model for the development of all the nation's major rivers, but the Corps and states succeeded in making sure that the TVA experiment was not repeated in other basins. *See infra* text accompanying notes 81–82.

13. In the nineteenth century, the national interest in water resources use expanded from the promotion of interstate commerce on navigable rivers to national economic development. In the twentieth century, the national interest was first expanded to include reservoir construction for flood control and water supply, then to development of extensive port and coastal erosion projects and the promotion of interstate equity, and finally to environmental heritage conservation. The Corps' primary mission remains the promotion of interstate commerce, which includes the maintenance of our navigable highways and national economic development. National economic development is primarily associated with flood control. The Corps has also contributed to the national goal of interstate equity by building projects that riparian states use to share the benefits of interstate rivers. Finally, the national government has long asserted an interest in conserving resources that it deemed important to the nation as a whole. The Corps' heritage functions include the regulation of water quality, biodiversity protection, and the restoration of modified ecosystems.

14. As of 2004, the Corps has no new large reservoirs underway, and the Bureau of Reclamation has only one. GAO, FRESHWATER SUPPLY: STATES' VIEWS OF HOW FEDERAL AGENCIES COULD HELP THEM MEET THE CHALLENGES OF EXPECTED SHORTAGES 48 (2003) [hereinafter FRESHWATER SUPPLY], *available at* http://www.gao.gov/cgi-bin/getrpt?GAO-02-514 (last visited Apr. 28, 2004).

15. The relationship between aquatic ecosystem restoration and the reoperation of existing projects is explored in MICHAEL COLLIER ET AL., DAMS AND RIVERS: A PRIMER ON THE DOWNSTREAM EFFECTS OF DAMS (U.S. Geological Survey, Circular 1126, 1996).

16. See Jeffrey W. Jacobs, *Broadening U.S. Water Resources Project Planning and Evaluation*, 42 NAT. RESOURCES J. 21 (2002), for a summary of recent criticisms of rational, but static, water resources planning. The National Research Council, recommended, *inter alia*, "movement away from consideration

existing infrastructure for dedicated purposes such as flood control, navigation enhancement, and water supply.[17] True to its historic capacity to adapt to changed political conditions, the Corps is eager to follow the money and expand its functions.[18]

This is easier said than done because the Corps is being pulled in two potentially inconsistent directions. One reform strand asks the agency to let go of its claimed monopoly on scientific and engineering water expertise—and more generally, on the national interest—and to engage in open-ended collaborative processes, which solve problems by consensus rather than managing by unilateral agency processes. The revival of watershed planning in the 1990s is an example of this reform. At the same time, the agency is also being asked to adopt new and better rational techniques, such as adaptive management and ecosystem services valuation, to plan and manage even more rationally at the largest geographic scale possible to implement holistic water resource polices that integrate a wider range of values than it did in the past. The conservation era dream of integrated river basin development led to the idea of the fully harnessed river where no drop of water reached the sea. Few want to return to this model, but many reform proposals try to adapt the conservation movement's dream of comprehensive, large-scale or holistic watershed and river basin planning and management to the full range of modern water uses, including the "normative" or more natural river,[19] that society now deems valuable.

B. Proposed Reforms: Power Sharing and Rational Experimentation

These new Corps missions and the evolving political context in which they will occur pose profound challenges both for the legal regime under which the Corps has operated and, more generally, for the maintenance of rule of law values in future resources management.[20] As applied to adminis-

---

of the National Economic Development (NED) account as the most important concern," the use of the watershed or estuarial region as the basic planning unit, and the adoption of adaptive management approaches. NAT'L RESEARCH COUNCIL, NEW DIRECTIONS IN WATER RESOURCES PLANNING FOR THE U.S. ARMY CORPS OF ENGINEERS 1–9 (1999) [hereinafter NEW DIRECTIONS].

17. This will be a challenge because the storage capacity of many dams is diminishing. FRESHWATER SUPPLY, *supra* note 14, at 25–26. Also, urban demands continue to increase in many areas of the country.

18. The agency has adopted Environmental Operating Principles, which it now incorporates in all its strategy documents. *E.g.*, U.S. ARMY CORPS OF ENG'RS, USACE 2012: ALIGNING THE U.S. ARMY CORPS OF ENGINEERS FOR SUCCESS IN THE 21ST CENTURY iii (2003), *available at* http://www.hq.usace.army.mil/stakeholders/Final.htm (last visited May 28, 2004).

19. Jack A. Stanford et al., *A General Protocol for the Restoration of Regulated Rivers*, 12 REGULATED RIVERS: RES. & MGMT. 391 (1996).

20. For a summary of the rule of law debates and literature, see Eric W. Orts, *The Rule of Law in*

trative law, the rule of law requires that "extra" constitutional agencies be accountable, both politically and judicially. Specifically, state power must be exercised in a non-arbitrary manner, be grounded in known laws, and be subject to independent judicial review. The calls for "out-of-the-box" thinking and management[21] could require a fundamentally different and potentially less accountable process of decision making at a time when fewer persons trust the Corps to represent the national or public interest in water resources and when no satisfactory alternative model of water governance has emerged. In addition, there is less and less faith in hyper-rationality as a legitimate basis for decision making. Put differently, the "modern," "hyper-rational" Corps is being asked to undertake "post-modern," "wicked,"[22] long-term, science-based experiments under conditions of varying uncertainty—which stresses our understanding of "sound" science and rational policy making—while still improving the rationality of its processes.

Decision-making rationality traditionally has been promoted through incremental reform in an agency's analytical methods; however, this strategy is unlikely to address adequately the problems that the Corps now faces. Recent National Academy of Sciences studies of the Corps point out three fundamental problems with Corps planning. First, the planning often occurs in a policy vacuum. The United States government no longer has a coherent federal water policy as it did when multiple-use development was embraced. Second, there are many calls for the Corps to plan and manage on larger and more integrated geographic scales than they have in the past.[23] All National Research Council (the research arm of the National Academy of Sciences) studies and others have endorsed the idea that the watershed is the correct scale for project planning and that individual projects should be planned and managed to achieve basin-wide objectives, but no one really knows what these recommendations mean operationally.[24] Third, the studies have identi-

---

China, 34 VAND. J. TRANSNAT'L L. 43 (2001).

21. Professor David H. Getches, in *The Metamorphosis of Western Water Policy: Have Federal Laws and Local Decisions Eclipsed the States' Role?* 20 STAN. ENVTL. L.J. 3 (2001), defines "outside-the-box" solutions as ad hoc coalitions that have come together to solve a specific basin issue (usually the protection of a listed endangered or threatened species) outside a traditional regulatory framework. *Id.* at 42.

22. As Professor Holly Doremus has acutely observed, "[b]ecause environmental problems are wicked, they cannot be solved objectively." Holly Doremus, *Constitutive Law and Environmental Policy*, 22 STAN. ENVTL. L.J. 295, 332 (2003).

23. *See generally*, NAT'L RESEARCH COUNCIL, RIVER BASINS AND COASTAL SYSTEMS PLANNING WITHIN THE U.S. ARMY CORPS OF ENGINEERS (2004).

24. *See generally* DOUGLAS S. KENNEY, NATIONAL RESOURCES LAW CENTER, ARGUING ABOUT CONSENSUS: EXAMINING THE CASE AGAINST WESTERN WATERSHED INITIATIVES AND OTHER COLLABORATIVE GROUPS ACTIVE IN NATURAL RESOURCES MANAGEMENT (2000), *available at* http://www.colorado.edu/Law/centers/nrlc/publications/RR23.pdf (last visited May 28, 2004).

fied marginal technical improvements in the evaluation techniques used from non-user value assessment to flood risk confidence levels.[25] These evaluations, however, have indirectly raised, but have not confronted, the larger question: what, if anything, does rational project planning and management mean in a world when fewer large-scale projects are likely to be undertaken and value conflicts are increasing?

C. *Hyper-rationality and the Rule of Law*

The Corps has not attracted much attention from administrative law scholars, but it is a classic example of the increasing futility of our insistence on hyper-rationality to control administrative discretion. The architects of the modern administrative state sought regulatory mechanisms that would allow the application of state power to changing economic, social, and scientific conditions. Originally, it was assumed that enlightened expertise would be an adequate substitute for the rule of law administered by common law judges. Accordingly, courts were taught that separation of powers principles required deference to administrative discretion.[26] This mantra is often repeated and applied, but the underlying rationale for deference has greatly eroded in the past fifty years. In addition, the Anglo-American identification of the law with common law judges[27] has always ensured that deference would be wildly uneven and distrusted.

The roots of the erosion of faith in expertise lie in the legal reaction to the New Deal, which led to the resurgence of judicial control of the administrative state.[28] After a decade-long debate about the proper role of judicial control of administrative action, the Administrative Procedure Act of 1946 (APA) rejected unconstrained discretion, no matter how expert. The APA relied primarily on the application of due process during the decision. Erosion was accelerated in the 1960s by two trends. The various social revolu-

---

25. *See generally* NAT'L RESEARCH COUNCIL, FLOOD RISK MANAGEMENT AND THE AMERICAN RIVER SYSTEM: AN EVALUATION (1995).

26. The Supreme Court has not directly applied the non-delegation doctrine to invalidate an act of Congress since *A.L.A. Schechter Poultry Corp. v. United States*, 295 U.S. 495 (1935). Judge Stephen Williams applied the doctrine to invalidate the standard setting provisions of the Clean Air Act in *Am. Trucking Ass'ns v. United States Envtl. Protection Agency*, 175 F.3d 1027, 1034–40 (D.C. 1999), but the Supreme Court held that the Constitution does not require Congress to specify the precise limits of the harm that can be regulated in *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 472–73 (2001). However, unlike other legal scholars, I find the delegation of state power to private individuals troubling. *See infra* text accompanying notes 155–58.

27. *See* Nicholas S. Zeppos, *The Legal Profession and the Development of Administrative Law*, 72 CHI.-KENT L. REV. 1119, 1139–45 (1997).

28. *See generally* George B. Shepherd, *Fierce Compromise: The Administrative Procedure Act Emerges from New Deal Politics*, 90 NW. U. L. REV. 1557 (1996).

tions of the 1960s and early 1970s coincided with the rise of the deeply pessimistic doctrines of law and economics and public choice theory.[29] These two developments helped undermine the New Deal faith in administrative expertise to articulate the public interest. As a result, agencies are now simultaneously constrained both by the "public," which has been given a voice to counter the narrow exercise of administrative expertise, and the courts.[30]

Public participation in agency decision making and increased access to judicial review are the hallmarks of modern administrative law. The new governance mantra is collaboration and consensus instead of implementation of Congressional mandates. Although the merits of this approach are open to serious debate, it is a logical extension of the disintegration of the New Deal state that began in the 1960s. The regulated community is still the central participant in administrative decision making, but new interests or "stakeholders" beyond those with a direct economic benefit in the agency's actions are increasingly included in the multiparty bargaining processes. Federal agencies, such as the Corps, are increasingly often only one of many powerful participants in resource management disputes. Collaborate governance has many potential positive possibilities, but it also has the potential to undermine rule of law values if collaboration leads to an erosion of rules and standards intended to reflect the national interest.[31]

More generally, the vision of the Corps as an experimental, collaborative agency poses three paradoxes for the promotion of rule of law values. First, the Corps is often portrayed by environmentalists as a lawless agency, but in fact, it is a model "rule of law" agency compared to sister management agencies, such as the Bureau of Reclamation. The Corps pays careful attention to its Congressional mandates and seldom engages in creative legislative reinterpretation, unlike the Department of Interior, especially under the Reagan and Bush II administrations.[32] Calls to adopt more holistic, integrated water-

29. The foundational works are ANTHONY DOWNS, AN ECONOMIC THEORY OF DEMOCRACY (1957), and JAMES M. BUCHANAN & GORDON TULLOCK, THE CALCULUS OF CONSENT: LOGICAL FOUNDATIONS OF CONSTITUTIONAL DEMOCRACY (1962).

30. *See generally* Richard B. Stewart, *The Reformation of American Administrative Law*, 88 HARV. L. REV. 1669 (1975).

31. The question of the relationship between the collaborative "contract" state to traditional understandings of the rule of law is the subject of much scholarly debate. Professors Jody Freeman and Bradley C. Karkkainen, among others, have been tracking the break-up of the modern regulatory state and the role of public law in the emerging "lite" state. *E.g.*, Jody Freeman, *The Contracting State*, 28 FLA. ST. U. L. REV. 155 (2000); Bradley C. Karkkainem, *Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism*, 21 VA. ENVTL. L.J. 189 (2002); Bradley C. Karkkainen, *Adapative Ecosystem Management and Regulatory Defaults: Toward a Bounded Pragmatism*, 87 MINN. L. REV. 943 (2003). *See generally* MATTHEW A. CRENSON & BENJAMIN GINSBURG, DOWNSIZING DEMOCRACY: HOW AMERICA SIDELINED ITS CITIZENS AND PRIVATIZED ITS PUBLIC (2002).

32. *See generally* WILLIAM SNAPE III & JOHN M. CARTER II, DEFENDERS OF WILDLIFE, WEAKEN-

shed approaches to its activities and to be more proactive in "instructing" Congress on improved water resources options push the agency away from the conventional understanding of the rule of law.[33] Thus, decisions may be both more ephemeral and less transparent and, as a result, harder to subject to either political or judicial accountability.

Second, critics of the resource agencies continue to place great faith in improved rational planning, be it through NEPA or benefit-cost analysis processes, as a means to improve agency performance and simultaneously control it.[34] The Corps presently adheres rigorously to rational planning, but it has reached the outer limits of its utility. In addition, rational planning has often been reduced to a formal exercise unconnected to the achievement of the underlying social objective. The very concept of rational planning as an appropriate decision tool is open to serious doubt.[35] Rational methods, including the idea that science can provide neutral decision criteria, have been criticized for masking inevitable, difficult value choices.[36] The erosion of faith science and rationality has the potential to decrease, rather than increase, the accountability of the agency because it increases incentives to "broker" solutions, thereby leading to the third paradox.

The third paradox arises because reliance on scientific and technical expertise is increasingly being supplemented with more participatory, open-ended processes that permit the substitution of the "political" or the "ethical" as science-based decisions. Many hail this as a welcome adaptation of democratic and public values to the "de-centered" state, but the question of whether the "contracting" state will be consistent with public or rule of law values is open to say the least.[37]

ING THE NATIONAL ENVIRONMENTAL POLICY ACT: HOW THE BUSH ADMINISTRATION USES THE JUDICIAL SYSTEM TO WEAKEN ENVIRONMENTAL PROTECTION (2003), *available at* http://www.defenders.org/publications/nepareport.pdf (last visited May 28, 2004).

33. *See infra* text accompanying notes 75–78.

34. *E.g.*, NEW DIRECTIONS, *supra* note 17.

35. The twentieth century has not been kind to the Enlightenment values of reason and objectivity. For a lucid account of the post World War II project of reasserting enlightenment values after World War II and the Holocaust, see IRA KATZNELSON, DESOLATION AND ENLIGHTENMENT: POLITICAL KNOWLEDGE AFTER TOTAL WAR, TOTALITARIANISM, AND THE HOLOCAUST (2003).

36. *See generally* A. Dan Tarlock, *Who Owns Science?*, 10 PA. ST. ENVTL. L. REV. 135 (2002) (discussing the proper role of science in watershed environmental disputes).

37. Collaborative governance used to be called agency capture. Under the influence of law and economics, the "captured" theory of agencies has now been discredited. However, students of earlier, failed collaborative western resource management experiments, such as the Taylor Grazing Act, are not excited about this new wave of stakeholder governance. *E.g.*, George Cameron Coggins, *Regulating Federal Natural Resources: A Summary Case Against Devolved Collaboration*, 26 ECOLOGY L.Q. 603 (1999).

D. The Argument: Adieu to Rationality Alone

This Article uses the United States Army Corps of Engineers (the Corps) as a case study to explore the tension between subjecting agencies to the rule of law through both hyper-rational procedures and close Congressional control on the one hand while allowing them to adapt to social change by being more experimental and collaborative on the other. The Corps is an interesting case study for three reasons. First, it is both a conventional regulatory agency and a mission development agency. It issues permits to dredge and fill wetlands under Section 404 of the Clean Water Act[38] and other activities that interfere with navigation,[39] and it builds water resources projects wherever it can. Second, it has a long tradition of rational decision making. Third, both of its functions continue to be criticized on fiscal and environmental grounds at the same time that the beneficiaries of the Corps' largesse fervently defend the status quo. Thus, the Corps is a good case study to examine whether there is a middle ground between a legal regime based on the traditional rule of law model and one that acknowledges the need for minimally constrained "expertise."

The Corps is an especially good, but tough, case because the agency is both within and outside the rule of law project. It is outside the traditional rule of law project because the ultimate issue in resource management is not whether decisions are rational or fair, but rather whether they make sense from a scientific and value perspective. Bad resource management decisions are very difficult to reverse, if they can be reversed at all. It is inside the project because of its long tradition of strict fidelity to the letter of Congressional mandates.

This Article traces the roots of the erosion of our faith in the Corps' rational processes. It then briefly summarizes the history of the Corps' rise as a rational management agency to illustrate how deeply faith in rationality is embedded in the agency, and it concludes with an analysis of some of the legal consequences of the reforms proposed to adjust the Corps to its new restoration, reoperation, and adaptive management missions. It argues that efforts to reorient the Corps will raise challenging questions of administrative law for two fundamental reasons. First, the Corps' non-regulatory missions make it less amenable than many other agencies to judicial control, especially when compared to agencies with standard setting and adjudicative

38. 33 U.S.C. § 1344 (2001). Section 404 evaluates the impacts of change on a case-by-case basis over relatively small geographic scales as a previous NRC publication noted critically. NATIONAL RESEARCH COUNCIL, COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT (2001).

39. 33 U.S.C. § 406 (2001).

missions. Second, the Corps, like most administrative agencies, is not structured to be reflective over the long run. It tries to construct the optimum project and to get everything "right" the first time, rather than trying to adjust constantly to changed conditions and new knowledge.

This Article's primary argument is that we cannot rely on continual incremental adjustments in agency rationality to increase accountability. We have reached the limits of improving the agency's rationality. Increasingly, the proposals depart from the search for hyper-rationality and call for increased Corps delegation of discretion, less reliance on front-end rational processes, and more attention to continuous evaluation and modification of project objectives. This Article concludes that the best that we can hope for is that the law governing the Corps should function as science does.[40] The law must provide a carefully structured and monitored process of iteration, provisional acceptance, and constant experimentation, validation, and revision in light of new knowledge and insight. Courts have a role to play in this process, but it will be a limited one. We must rely on other internal and external checks of agency performance.

II. THE DILEMMA OF THE POST-MODERN CORPS: ENLIGHTENMENT VALUES IN A PARTICIPATORY, SPIRITUAL ERA

A. Enlightenment Values and the Corps

The Corps is a product and embodiment of the Enlightenment's faith in scientific progress, and the roots of its problems are a manifestation of the tension between enlightenment and post-enlightenment values created by the horrors of the twentieth century. The Enlightenment produced the idea of scientific and human progress that thrived until the beginning of the twentieth century. The method for achieving this progress was scientific rationality. The two great wars of the twentieth century put an end to the idea (or illusion) of human progress,[41] but the idea of rational scientific progress had a good run and continues to be the dominant decision making paradigm. The nineteenth century bequeathed the twin ideas of progress and expertise to the twentieth century, forming the basis for the legitimacy of the expert administrative agency. These twin ideas influenced water management as a result of the progressive or scientific conservation movement. Progressives rejected Darwinistic determinism and insisted "that evolution had produced

40. I am indebted to Professor Holly Doremus of the University of California at Davis for this point.
41. *See generally* KATZNELSON, *supra* note 35.

human intelligence."[42] The Corps personified this optimism, especially after World War II when advances in mathematics, particularly game theory, held out the hope that optimum, rational solutions to problems, such as water resource use, could be objectively calculated and measured.[43] Rational public investment would better the human condition by harnessing nature.

The Corps' enlightenment legacy is stressed by two intertwined criticisms of its performance. Initially, the need for public works in the New Deal and the immediate aftermath of World War II shielded the Corps from the loss of faith in rationality and progress. In the 1970s, however, two powerful forces came together to undermine the twin pillars of the Corps' historic mission of improving nature through objective, rational processes. The new environmental movement adopted many of the earlier fiscal criticisms of subsidized federal investment in water resources[44] as inefficient to challenge the need for new, large projects, while concurrently arguing that the Corps' mission was morally wrong because it destroyed nature.[45]

B. The Benefit-Cost Issue

One of the great unanswered questions of public policy is whether governments can in fact spend money efficiently, assuming that this is a desirable goal.[46] Fiscal discipline has been one of the great projects of welfare economics, and federal water resources spending has been a great laboratory.

---

42. EDWARD A. PURCELL, JR., THE CRISIS OF DEMOCRATIC THEORY: SCIENTIFIC NATURALISM AND THE PROBLEM OF VALUE 10 (1973).

43. In 1955, the Rockefeller Foundation established the Harvard Water Program, which brought together leading engineers and economists to train graduate students and mid-career professionals in state of the art water project design. Maynard M. Hufschmidt, *The Harvard Program: A Summing Up*, *in* WATER RESEARCH 441 (Allen V. Kneese & Stephen C. Smith eds., 1966). For a history of the foundation of rational planning, probabilistic hydrology models, see generally Martin A. Reuss, *Probability Analysis and the Search for Hydrologic Order in the United States, 1885–1945*, 4 WATER RESOURCES IMPACT NO. 3 (Am. Water Res. Ass'n, Middleburg, VA.), May 2002, at 7, *available at* http://www.awra.org/impact/0205impact.pdf (last visited May 28, 2004).

44. The Corps was required to perform benefit-cost studies on its projects in the Flood Control Act of 1936. *See infra* Part III.C. From the beginning, there was sustained academic criticism that the agency inflated the benefits of its proposal. *See, e.g.*, S.V. Ciriacy-Wantrup, *Benefit-Cost Analysis and Public Resource Development*, *in* ECONOMICS AND PUBLIC POLICY IN WATER RESOURCE DEVELOPMENT 9, 16–19 (Stephen C. Smith, Emery N. Castle eds., 1964) (discussing the practice of including secondary or indirect project benefits even though they are likely to occur regardless of the public investment). For an early account of the matter, see generally ARTHUR MAASS, MUDDY WATERS: THE ARMY ENGINEERS AND THE NATION'S RIVERS (1951).

45. For an early, now forgotten, polemic against the "sins" of the Corps and engineers in general, see generally GENE MARINE, AMERICA THE RAPED: THE ENGINEERING MENTALITY AND THE DEVASTATION OF A CONTINENT (1969).

46. For a classic discussion of the question in the context of water resources, see generally ROLAND N. MCKEAN, EFFICIENCY IN GOVERNMENT THROUGH SYSTEMS ANALYSIS: WITH EMPHASIS ON WATER RESOURCES DEVELOPMENT (1958).

In 1936, the Corps was instructed by Congress to calculate the costs and benefits of its projects,[47] but there was little understanding of what this meant. Gradually, economists created the applied art of benefit-cost analysis to do this.[48] By the 1950s, the Corps began to face two separate challenges that came together and led to a shift away from large-scale dams, levees, and channel improvement projects and toward a greater emphasis on environmental protection.[49] The first came from economists and students of river basin development. These critics raised both questions about the technical methods that the Corps used to compute costs and benefits and more generally questioned the economic desirability promoting regional development through dam construction. Others, such as the distinguished Gilbert White, questioned the almost sole reliance on structural flood control measures and advocated for a broader mix of structural and non-structural alternatives to address the so-called moral hazard problem, wherein increased flood plain protection increases its attractiveness for development, creating the cycle of increasing losses.

Formal benefit-cost analysis was an important innovation, despite the repeated questioning of the efficiency of large scale public works since Thomas Jefferson's presidency. The Corps has tried to execute its cost-benefit mandate, but its assumptions and calculations have long been questioned and often found wanting. This reflects a long tension between the Corps' vision of an elite, expert agency that should be allowed to define the national interest and the more democratic idea that public spending should be disciplined by subjecting public spending to a standard similar to private spending. The former idea was beautifully expressed by a Corps officer in 1826. "'When a nation undertakes a work of great public utility the revenue is not the central object to take into consideration: its views are of a more elevated order—and they are all, it may be said, exclusively, directed toward the great and general interests of the community . . . .'"[50]

The Corps responded to the requirement that it do benefit-cost analysis by developing a highly structured, rational planning process.[51] Benefit-cost

47. 33 U.S.C. § 701a (2001).

48. The literature is enormous. For an example discussion of this analysis in relation to water resource system planning in general, see generally CHARLES W. HOWE, Am. Geophysical Union, Water Res. Monograph No. 2, BENEFIT-COST ANALYSIS FOR WATER SYSTEM PLANNING (1971).

49. *See generally* BEATRICE HORT HOLMES, Dep't. of Agric., Misc. Pub. No. 1379, HISTORY OF FEDERAL WATER RESOURCES PROGRAMS AND POLICIES, 1961–1970 (1979).

50. TODD SHALLAT, STRUCTURES IN THE STREAM: WATER, SCIENCE, AND THE RISE OF THE U.S. ARMY CORPS OF ENGINEERS 132 (1994) (*quoting* SIMON BERNARD ET AL., REPORT FROM THE BOARD OF ENGINEERS CONCERNING THE PROPOSED CHESAPEAKE AND OHIO CANAL 66, H. EXEC. DOC. NO. 10, 19TH CONG. (2d Sess. 1826)).

51. *See generally* CHARLES E. YOE & KENNETH D. ORTH, U.S. ARMY CORPS OF ENG'RS, PLANNING

analysis, along with other techniques such as flood frequency calculations, have always been as much an art as a science. The uncertainties under which the Corps has had to operate have made it possible to manipulate to achieve a desired political outcome, a favorable project authorization recommendation. Not surprisingly, the Corps' use of benefit-cost analysis continues to be questioned.[52]

C. *The Environmental Movement*

The most fundamental challenge to the Corps is the environmental movement. It questioned both the basic mission of the Corps' hydrologic modification—and questioned the crucial assumption behind all of the Corps' methodology—namely, the calculation of an optimum solution. Environmental NGOs initially used the economic critique to challenge the whole range of Corps activities, from dams to stream channelization. In the process, NGO's substituted the new paradigm of river use for the pure river basin development one. To the Corps, rivers have long remained objects of an imperfect nature to be improved for human progress through the application of science and engineering. As a result of environmentalism, we now see rivers as integral parts of a natural landscape and as natural systems that can provide valuable ecosystem services along with the historic benefits. We also see them as parts of our wilderness heritage. The passage of the Wild and Scenic Rivers Act[53] marked the beginning of the end of the Big Dam era, although this realization did not hit the water resource agencies until the 1970s. Quite simply, the environmental movement substituted an ethic of care and stewardship for the traditional view of nature as a treasure chest of valuable commodities.[54]

The idea of resource stewardship has led to a more radical ecological ideal of managing river systems to maximize ecological functions—the maintenance of the river's historic natural "service." The newer ecological integrity vision is less clearly articulated than multiple use because it rests on

---

MANUAL (1996), *available at* http://www.iwr.usace.army.mil/iwr/pdf/96r21.pdf (last visited May 28, 2004); U.S. ARMY CORPS OF ENG'RS, PUB. NO. ER 1105-2-100, PLANNING GUIDANCE NOTEBOOK, *available at* http://www.usace.army.mil/inet/usace-docs/eng-reg/er1105-2-100/toc.htm (last visited May 28, 2004).

52. *E.g.*, TAXPAYERS FOR COMMON SENSE & NATIONAL WILDLIFE FEDERATION, CROSSROADS: CONGRESS, THE CORPS OF ENGINEERS, AND THE FUTURE OF AMERICA'S WATER RESOURCES (2004) (identifying twenty-nine wasteful Corps projects costing $12 billion), *available at* http://www.taxpayer.net/corpswatch/crossroads (last visited May 28, 2004).

53. 16 U.S.C. §§ 1271–1287 (2001).

54. JOHN PASSMORE, MAN'S RESPONSIBILITY FOR NATURE 28–40 (1974); Gilbert White, *Reflections on Changing Perceptions of the Earth*, 19 ANN. REV. ENERGY & ENV'T 9, 13 (1994).

a more complex view of the human role in the functioning of natural systems.[55] It starts from the premise that we must try to integrate human uses of a river system with the maintenance of its natural environmental sustainability,[56] both in the design of new projects and the re-engineering and operation of existing facilities. The current focus is on restoration because river systems are modified but dynamic, ever-changing, functioning ecosystems that serve a variety of functions—from the maintenance of consumptive uses to the provision of a whole range of services, such as biodiversity, polluter filtering, and flood retention.[57]

This river preservation concept is not simple because it will be realized, if at all, within the framework of environmentally sustainable use and development. River use must always accommodate a sustainable, non-wasteful level of consumptive use.[58] Although some aquatic scientists want to subordinate human use to the "normative" river, the newer river-as-ecosystem concept starts from the premise that we must try to integrate human uses of a river system with the maintenance of its natural environmental sustainability, both in the design of new projects and the re-engineering and operation of existing facilities.

The Corps continues to grapple with its self-assumed environmental stewardship responsibilities within the context of its planning protocols, but the limits of rational processes that try to get it right "up front" to produce good resource use and management have eroded over time as we have come to see the natural world as much more dynamic, rather than static.[59] The Corps invests great resources in the front-end planning of its activities and almost nothing on back-end monitoring and adjustment. The result is the increasing lack of faith in the agency[60] and in the continued refinement of its traditional analytical processes.[61] Thus, it is appropriate to focus on the

55. I have discussed this paradigm shift at greater length in A. Dan Tarlock, *Water Law Reform in West Virginia: The Larger Context*, 106 W. VA. L. REV. 1 (2004).

56. Stanford, *supra* note 19, at 392–93 (1996).

57. James Salzman & J.B. Ruhl, *Currencies and Commodification of Environmental Law*, 53 STAN. L. REV. 607 (2000).

58. This concept was endorsed in WESTERN WATER POLICY ADVISORY REVIEW COMMISSION, WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY 3-2 to 3-3 (1998).

59. *See, e.g.*, DANIEL B. BOTKIN, DISCORDANT HARMONIES: A NEW ECOLOGY FOR THE TWENTY-FIRST CENTURY (1990); STEPHEN BUDIANSKY, NATURE'S KEEPERS: THE NEW SCIENCE OF NATURE MANAGEMENT (1995) (discussing new, dynamic approaches to nature management).

60. For a penetrating critique of this problem in all environmental agencies, see generally, SHAPIRO & GLICKSMAN, *supra* note 1.

61. *See, e.g.*, NATIONAL RESEARCH COUNCIL, INLAND NAVIGATION SYSTEM PLANNING: THE UPPER MISSISSIPPI RIVER-ILLINOIS WATER WAY 86–87 (2001), *available at* http://books.nap.edu/books/6309074053/html/index.html (last visited Dec. 14, 2004) (concluding that the Corps' economic model is too flawed to be used in feasibility study of improvements in the Upper Mississippi River navigation system).

question of whether the continued reliance on rational planning, supported by the best available technical and scientific information, is the appropriate model for the "post-modern," post-Big Dam era Corps and whether there are, in fact, viable alternatives to this model.

III. A BRIEF HISTORY OF THE CORPS AS NATIONAL RIVER MANAGER

The Corps began as a military fortification construction unit during the Revolutionary War, but in the early decades of the nineteenth century, it became a water resources management agency. To promote economic development by taming the nation's water resources, the Corps carried forward the French engineering tradition of state financed, large-scale hydraulic works built to serve the national military and commercial interest.[62] In the turbulent early years of the Republic, the Corps was the most professional, scientific organization in the United States and played a major role in adapting European hydraulic studies and river manipulation techniques to the frontier in order to promote national growth. Its mission quickly expanded from the construction of defensive fortifications to roads, navigation enhancement, and later, flood control.[63] However, the Corps' grand vision of centrally-planned national public works and a scientific survey was opposed by successive early administrations that feared the creation of a powerful central government.[64]

The Corps was able to thrive in all political environments for two primary reasons. First, for two centuries, the Corps has stood both as an innovative force for integrated water resources planning and as a vehicle for local interests to construct unintegrated projects of questionable economic, hydraulic, and ecological merit. Second, until the 1960s, the national water resources debate centered around the best ways to accomplish the Corps' objectives, not around the objectives themselves.[65] There was a strong national consensus that nature was a commodity to be developed and perfected for human benefit. Translated to water, this meant that the natural hydrograph of rivers had to be manipulated and "smoothed out" to support national expansion and economic growth. Thus, the flow variability that nature imposed on rivers had to be substantially reduced by structural solutions to make them suitable for human use and benefit.

---

62. SHALLAT, *supra* note 50, at 1–3.

63. *Id.* at 4.

64. *Id.* at 4–7.

65. *See generally* BEATRICE HORT HOLMES, U.S. DEP'T OF AGRIC., Misc. Pub. No. 1233, A HISTORY OF FEDERAL WATER RESOURCES PROGRAMS, 1800–1960 (1972).

A. *The Revolutionary Era Intellectual and Historical Roots of the Corps*

The Corps is a product of the Revolutionary War. It traces its origins to the construction of Bunker Hill fortifications and Forts Norfolk and Nelson on Chesapeake Bay in 1774–1775. After the war, many politicians opposed a large, standing professional army, and the idea of national public works was opposed on constitutional and political grounds. More generally, there were widespread prejudices against scientific knowledge and planning—a tension that runs through all efforts to control the use of natural resources to this day. The Corps survived because its expertise in building military fortifications led naturally to its involvement in civil projects, although support for this mission fluctuated in the early nineteenth century as the federal role in national development was debated.

A permanent Corps of Engineers was organized in 1802 at the same time that the Congress established the military academy at West Point. Initially, there was no clear division between its military and civilian missions. The Board of Internal Improvements was premised on the unity of military and civilian works. The Corps and West Point supported each other for much of the nineteenth century. After the War of 1812 (1812–1814), the Corps was underemployed after Congress reduced the standing army to 10,000 men, and it slowly began to carve out an important civilian role that matured in the late nineteenth century. The Corps' national role was at the heart of the internal improvement issue. During the 1820s, the earlier constitutional doubts about the power of the federal government to fund public works were resolved in favor of a national role. Although Congress never fully adopted the ideas of Albert Gallatin[66] and Henry Clay's "American Plan" of protective tariffs and internal improvements, the growing power of the western states created a powerful political constituency for nationally planned and financed public works. There was considerable opposition to internal road and canal projects, but the improvement of harbors and inland rivers was much more widely accepted as a national responsibility because it directly promoted interstate commerce. The Corps' navigation protection and enhancement role has long rested on a firm constitutional footing. The United States Supreme Court upheld the power of Congress to regulate navigation in 1824[67] and consistently held that the states could not authorize interferences with interstate navigable waters.[68]

66. ALBERT GALLATIN, REPORT OF THE SECRETARY OF THE TREASURY ON THE SUBJECT OF PUBLIC ROADS AND CANALS (1808).

67. Gibbons v. Ogden, 22 U.S. (9 Wheat.) 1, 239–40 (1824).

68. *E.g.*, Pennsylvania v. Wheeling & Belmont Bridge Co., 54 U.S. (13 How.) 518, 626–27 (1851).

B. Anti-Bellum Mission Expansion

To support the westward expansion of the United States, the Corps was assigned the task of surveying road and canal routes and removing navigation hazards along the major inland rivers. Navigation innovation began on the Ohio River. Major Stephen H. Long (later a major Western explorer) constructed an experimental wing dam to increase the velocity of the Ohio River to shrink a sandbar below Henderson, Kentucky. But the Corps did not begin the widespread construction of navigation dams and locks until 1874, when the David island lock and dam were constructed below Pittsburgh. The Corps' major innovations were in snag bar removal and dredging technology. The Corps removed thousands of snags in a futile fight against the treacherous Upper Missouri, which claimed almost "1,000 steamers, ferries, and snagboats" in the nineteenth century before the railroads supplanted navigation.[69] The first hydraulic dredge was constructed in 1871.

Flood control was added to the Corps' mission in 1850 when Congress appropriated money to survey the Mississippi River. America's Great River, the Mississippi, was the Corps' laboratory for flood control policy. The Corps' record is an example of both the strengths and weaknesses of science-based decisions. The 1861 Humphreys-Abbott Report was a major, but incomplete, study of the flow of a major river, which established a flood control theory that continues to influence thinking today.[70] Humphreys and Abbott believed that the flooding of the Mississippi could only be controlled by the construction of levees, rather than reservoirs.[71] Eventually, they took credit for James B. Eads's rival theories that jetty construction would increase the discharge of the river, improving both flood control and navigation. To many, however, the Mississippi is a classic case of the Corps' inflexibility because of its long resistance to upstream flood control storage and its insistence on a levees-only policy to control floods.[72]

In 1879, Congress created the Mississippi River Commission,[73] which implemented the levees-only policy. "Levees only" remained the basis of

---

69. SCHNEIDERS, *supra* note 2, at 55.

70. A. A. HUMPHREYS & H. L. ABBOT, REPORT UPON THE PHYSICS AND HYDRAULICS OF THE MISSISSIPPI RIVER (U.S. Army Corps of Topographical Eng'rs, Professional Paper No. 4, 1861).

71. JOHN M. BARRY, RISING TIDE: THE GREAT MISSISSIPPI FLOOD OF 1927 AND HOW IT CHANGED AMERICA 50–54 (1997).

72. *E.g.*, ARTHUR E. MORGAN, DAMS AND OTHER DISASTERS: A CENTURY OF THE ARMY CORPS OF ENGINEERS IN CIVIL WORKS 240–51 (1971).

73. 33 U.S.C. § 647 (2001).

Corps flood control policies in the face of continued major floods and the success of the flood control dams built by the Miami Conservancy District in Ohio, based on their pioneering work in estimating storm and flood frequencies.[74]

C. The Corps from the Progressive Conservation Era to the New Deal

The modern Corps is a product of the Progressive Conservation Era, which was a "moment in time" for American water resources policy. Progressive conservation, spanning from the last decade of the nineteenth century through the first two decades of the twentieth coincided with the rise of the modern university and their humanities, sciences, and professional schools. Engineering was a highly prestigious profession, which supported the era's faith in rational management and progress through the development and application of technology. Out of this crude focus on science as a guide to public policy, a holistic vision of watershed and river basins as an integrated natural (the word ecosystem was not used) and social system emerged for the first time. To this day, the underlying ideal of water management based on hydrologic rationality rather than regional and local competition for individual, unintegrated projects remains the major alternative to the politics of distribution that characterizes federal water resources policy. The Supreme Court endorsed the idea that hydrologic rationality does not respect political boundaries as an extension of an expansive view of navigability.[75] The Court's endorsement helped form the basis for the "pure doctrine of river basin management," whereby the construction and management of comprehensively planned, integrated federal projects on the nation's large rivers promoted regional development.[76] Proponents of comprehensive watershed and river basin planning assumed that large-scale water resource projects were necessary to promote the efficient (non-wasteful) use of water through multiple purposes and provide widespread benefits to the nation.

The Corps initially resisted multiple purpose development but ultimately embraced it in the 1920s. Some officials in the newly organized Bureau of

---

74. Reuss, *supra* note 43, at 12.

75. *E.g.*, United States v. Rio Grande Dam & Irrigation Co., 174 U.S. 690, 707–09 (1899); United States v. Appalachian Elec. Power Co., 311 U.S. 377, 409–10 (1940); Oklahoma *ex rel.* Phillips v. Guy F. Atkinson, 313 U.S. 508 (1941) ("no constitutional reason why Congress cannot under the commerce power treat watersheds as a key to flood control on navigable streams and their tributaries"); United States v. Grand River Dam Authority, 363 U.S. 229, 233 (1960) ("When the United States appropriates the flow either of a navigable or a nonnavigable stream pursuant to its superior power under the Commerce Clause, it is exercising established perogatives and is beholden to no one.").

76. 1 WATER RES. POLICY COMM'N, A WATER POLICY FOR THE AMERICAN PEOPLE: THE REPORT OF THE PRESIDENT'S WATER RESOURCES POLICY COMMISSION 52 (1950).

Reclamation, created to administer the Reclamation Act of 1902, enthusiastically endorsed the idea. But influential members of Congress never accepted the idea of the Inland Waterways Commission championed by President Theodore Roosevelt, and the Corps clung to a narrow flood control and navigation vision and mission, both to protect its autonomy and to maintain its support in Congress[77] because the technology for large dams and long distance electric transmission lines had not been developed in the first decade of the twentieth century. Thus, the Corps came to multiple-purpose dam construction relatively late as a result of its levees only policy. Until the 1920s, its activities remained closely tied to commercial navigation enhancement and the construction and maintenance of flood control levees. In many instances, the Corps resisted both popular support for large-scale projects, such as the Chicago-New Orleans Deep Waterway, and new theories of water management, such as the multiple purpose dam movement. Ultimately, however, it embraced the concept enthusiastically.[78]

The Great Mississippi flood of 1927 was a traumatic and transformative event both in American politics and in water policy, and it ultimately led to large-scale, multiple-purpose development. President Coolidge's characterization of the flood as an act of God and his refusal to support federal flood relief generated public backlash asserting that the federal government has the responsibility to supplement the levee program, designed to benefit navigation, with programs designed to protect the valley from future floods.[79] This ultimately led to the adoption of a more comprehensive river basin approach with dams, levees, and floodways. In 1927, Congress authorized comprehensive river basin surveys, resulting in the 308 studies.[80] In 1936, the Corps was authorized to build dams when flood control was declared a national responsibility.

The Flood Control Act of 1936 dramatically expanded the Corps' planning role and is the foundation of its current efforts to use good engineering and physical and social science in project planning. In the go-go years of national dam building, the 1940s to the 1960s, the Corps was able to build large reservoirs on many small eastern and midwestern tributaries. The 308

77. The standard history of the movement is discussed in SAMUEL P. HAYS, CONSERVATION AND THE GOSPEL OF EFFICIENCY: THE PROGRESSIVE CONSERVATION MOVEMENT 1890–1920 (1959).

78. See DONALD J. PISANI, WATER AND AMERICAN GOVERNMENT: THE RECLAMATION BUREAU, NATIONAL WATER POLICY, AND THE WEST, 1902–1935, 286–88 (2002), for a recent and more nuanced view of the positions of the two major water agencies—the Bureau of Reclamation and the Corps—on multiple-purpose development.

79. BARRY *supra* note 4 at 369–74.

80. 43 Stat. 948 (1925). 3 WATER RESOURCES LAW: THE REPORT OF THE PRESIDENT'S WATER RESOURCES POLICY COMMISSION (1950), remains the most comprehensive survey of the Corps' legal authority to that time.

studies and New Deal's support of large-scale public works enabled the Corps to expand its activities from the East, Southeast and Midwest to the Inner-Mountain West and the Pacific Coast. For example, in 1935, the Tucumcari District was established in arid New Mexico to construct the Conchas Dam on the Canadian River. Subsequently, seven major dams were constructed in southern Colorado and New Mexico. The Corps successfully out-maneuvered the Bureau of Reclamation for the construction and, thus, control of reservoirs on the Missouri mainstem,[81] the Columbia, and the Kings and Kern Rivers in California.

Over time, state and local governments came to rely on federal agency leadership and federal funding for water control projects that often provided local areas with direct benefits. Decisions about distribution of the federal financial largesse often were based on political vote trading in Congress, where individual representatives worked with the agencies and their constituents who stood to benefit from the projects—the "pork barrel"[82] as critics of the Corps call it. As a result, the "iron triangle"—consisting of the Corps, powerful Congressional committee chairs, and local project proponents—reduced the executive branch's role to screening out the least justified projects from Congressional consideration, rather than budgeting for an optimum set of projects derived via a carefully developed planning process. Since the Presidency of Theodore Roosevelt, presidents tried, with limited success, to break this triangle.

D. The Short-Lived Triumph of Rational Planning

The modern era of the Corps can be characterized by an unsuccessful search for the "perfect rational" planning process, characterized by planning at more rational geographic scales, the expansion of the Corps' mission, and the increased criticism of its missions. Rational planning can be seen as an end in-and-of itself, as well as a way to discipline the growing taste for federal "pork." The ideal of rational project and city planning is an old one. During the first two decades of the twentieth century city, however, resource planning evolved from a purely architectural or engineering function into a scientific process of information assembly and problem solving.[83] The founding of the United States Geological Survey in 1879 was important in shifting hydrological research from the diffuse private sector to the govern-

81. *See generally* FERRELL, *supra* note 9; MARC REISNER, CADILLAC DESERT THE AMERICAN WEST AND ITS DISAPPEARING WATER, 176–94 (1986).

82. MAASS, *supra* note 44, remains the classic articulation of this thesis.

83. *See* MEL SCOTT, AMERICAN CITY PLANNING SINCE 1980 120–121 (1971).

ment. Under the leadership of pioneers, such as Robert E. Horton, the focus of hydrology was on "the conservation of water mass at the scale of the river basin,"[84] which fit nicely with the idea of integrated, technical planning at large scales.

There was broad public support for this vision of the well-managed watershed where water management was synonymous with controlling how rivers behave and, more particularly, with taming that behavior. Water project structures were to result in control of the hydrologic extremes and reclamation of arid lands and riverine environments for the prosperity of the nation. Even calls for non-structural measures rested on a logic that people should adjust to nature (flood and drought) because adjustment was a practical and cost-effective response to hydrologic extremes[85]—not because attempts to control natural variability were either detrimental to the biological communities of the river or were simply "wrong."

Modern water resources rational planning developed rapidly from the end of World War II through the early 1960s in response to the construction of new dams and other water resource projects. Until the late 1940s, engineers made all important water resource decisions. They formed the core of the emerging discipline of water resource project planning, which became an important academic subject.[86] In 1955, the Rockefeller Foundation funded the Harvard Water Program, a joint water resource system design seminar for graduate students and government personal.[87] The Corps provided support for the program from 1961 to 1965.[88] The Harvard program combined engineering, systems analysis, and economics in an attempt to plan and design "optimal" projects.[89] It assumed that a project had a finite number of outputs that could be measured. Thus, alternative projects could be ranked using mathematically calculated, sophisticated models that maximized the desired project outcomes. It was initially attractive, both to the Corps as a way of enhancing its professional prestige and to the executive branch as a way of taming the iron triangle.

---

84. NATIONAL RESEARCH COUNCIL, OPPORTUNITIES IN THE HYDROLOGIC SCIENCES 41–42 (1991).

85. Geographer Gilbert White is the leading proponent of the idea that flood damage reduction needs to consider a mix of structural and non-structural alternatives to prevent the moral hazard problem: reservoirs open flood plains to more intensive development, which increases the damage caused by major floods. *E.g.*, GILBERT F. WHITE, HUMAN ADJUSTMENT TO FLOODS (Univ. of Chicago Research Paper No. 29, 1945); White, *supra* note 54, at 251.

86. *See generally* ARTHUR MAASS ET AL., DESIGN OF WATER-RESOURCE SYSTEMS (1962).

87. Maynard M. Hufschmidt, *The Harvard Program: A Summing Up*, *in* WATER RESEARCH 441–42, (Allen V. Kneese & Stephen C. Smith eds., 1966).

88. *Id.* at 442.

89. *Id.* at 443.

The Harvard Program became operational during the first Eisenhower Administration, just as it was implementing a "no new starts policy" for large water projects.[90] Senator Robert Kerr chaired a Senate Committee that recommended the construction of new water resource projects having more sensitivity to pollution and newly identified environmental issues.[91] In 1965, Congress reacted to the Kerr Report by passing the 1965 Water Resources Planning Act,[92] the high water mark of federal commitment to rational water resources planning. Ironically, the Act was passed as the national commitment to water control projects was waning and, thus, the analytical tools developed for the ideal or optimal project were, like the 1950s automobiles with tail fins, obsolete almost from birth. In one view, the Congressional passage of the Act was an effort to revive a flagging program. The Act created a three part national planning approach to national water resources management to be administered by a Federal Water Resources Council in conjunction with regional River Basin Commissions. Water projects were to follow evaluation practices set forth by the Council. However, this rational process was adopted just as the federal government lost its taste for large, regional, subsidized water resources projects as engines of growth, just as many cities are losing faith in sports stadiums today.

The last major effort to develop a rational, coordinated federal water policy, occurred in response to fears of a large-scale diversion from the Columbia River Basin to southern California, which, ironically, signaled the end of the big dam or public works era and ushered in the era of environmental protection and greater market discipline. To diffuse interregional tensions, Congress created, staffed, and adequately funded the National Water Commission. Unfortunately, its 1973 Report[93] was lost in the Watergate scandal. Nonetheless, it accurately described and endorsed many of the major subsequent developments in water policy because it reflected the transition from the large dam and construction project era to the post-large dam era.

The Commission's basic message was that the rationality behind subsidized water development no longer existed. The Commission called for an end to future subsidies for reclamation projects and navigation improvements, greater use of water transfers, more accurate pricing of both irrigation and M & I water, and it criticized the excessive reliance on structural flood control measures. *Water Policies for the Future* also contained a penetrating

90. Theodore Shad, *An Analysis of the Work of the Senate Select Committee on Nat'l Water Res., 1959–1961*, 2 NAT. RESOURCES J. 226, 230–31 (1962), sets out the history of the policy.

91. S. REP. NO. 87-29, at 1 (1961). See also Shad, *supra* note 90, for a history of the committee.

92. Pub. L. No. 89-90, 79 Stat. 244 (codified as amended at 42 U.S.C. §§ 1962–1962d-3 (2001)).

93. NAT'L WATER COMM'N, WATER POLICIES FOR THE FUTURE: FINAL REPORT TO THE PRESIDENT AND TO THE CONGRESS OF THE UNITED STATES BY THE NATIONAL WATER COMMISSION (1973).

critique of water resources decision making, which it characterized as "an end in itself."[94] It called for greater integration of land use and water planning on the erroneous assumption that Congress would pass a national land use planning act, that would include federal grants for improved state and local planning, as well as the integration of water quality and quantity planning, which still occurs only on an ad hoc basis. It also addressed the long-standing problem of competition and duplication among agency functions and called for a centralized data collection agency. The Commission stopped short of calling for a Department of Natural Resources because it forecast the Bureau of Reclamation's long term role as resource manager rather than project construction agency and saw a similar, but more radically diminished, role for the Corps of Engineers.[95]

IV. MODERN CHALLENGES: THE POST-MODERN AGENCY AND ACCOUNTABILITY

The Corps has long embraced the idea of environmental stewardship and innovative management.[96] The problem is not "talking the talk" but "walking the walk." It has long viewed environmental protection and restoration as an activity that can be pursued with its existing expertise and within its legal authorities. Thus, the Corps' environmental mission remains undeveloped. For example, they have no working definition of restoration of the environment.[97] More generally, the Corps' methods do not work very well for environmental problems. In addition to the continuing problem of cost-

94. *Id.* at 366.

95. *Id.* at 412.

96. For an early positive assessment of the Corps' acceptance of environmental responsibilities, see DANIEL A. MAZAMANIAN & JEANNE NIENABER, CAN ORGANIZATIONS CHANGE? ENVIRONMENTAL PROTECTION, CITIZEN PARTICIPATION, AND THE CORPS OF ENGINEERS (1979).

97. Ecosystem restoration is not self-defining. A major 1992 study adopted a strict definition of restoration by defining it as "the return of an ecosystem to a close approximation of its condition prior to disturbance." NATIONAL RESEARCH COUNCIL, RESTORATION OF AQUATIC ECOSYSTEMS 18 (1992). This definition distinguishes restoration from other lesser improvements such as creation, reclamation and rehabilitation because only restoration is a "holistic process" rather than "the isolated manipulation of individual elements." *Id.* at 17. The Report also distinguished restoration from mitigation, which it dismissed as "simply the alleviating of any or all detrimental effects arising from a given action," as well as from preservation. *Id.* at 19. The definition is a useful starting point, but in many cases, the proposed "restoration" activity may not meet this standard, although it will be a net improvement to the aquatic ecosystem. Not all definitions are as strict as the NRC's. In 1994, the Ecological Society of America adopted a resolution that defines restoration more broadly as "the process of repairing damage caused by humans to the diversity and dynamics of indigenous ecosystems." Laura L. Jackson et al., *Ecological Restoration: A Definition and Comments*, 3 RESTORATION ECOLOGY 71, 71 (June 1995). The Corps should be given the flexibility to adopt restoration objectives for specific systems, but it should not be allowed to count any effort to modify a pre-existing project to fulfill an environmental objective as aquatic ecosystem restoration.

benefit ratio manipulation[98] and the illusion of certainty, the Corps has trouble measuring the value of ecosystem services, deciding the right geographical planning and management scales for project planning and design, and is just beginning to experiment with adaptive management.

A. The Corps' New Mission: Restore and Conserve

The Corps plans to reform itself by correcting many of its past "mistakes."[99] The restoration mission of the Corps has been steadily expanding as aquatic ecosystem restoration becomes a major national priority,[100] but the expansion is ad hoc, uneven, and not fully supported by adequate authority or funding. Subsequent special legislative provisions and omnibus rivers and harbors development acts have authorized environmental projects to mitigate for past damages and to restore areas that had been degraded in the past. For example, section 306 of the Water Resources Development Act ("WRDA") of 1990 identified "environmental protection" as a central mission for the Corps.[101] Section 307 called for the development of a wetlands action plan to achieve the goal of "no overall net loss" of the nation's wetland base.[102] The Coastal Wetlands Planning, Protection and Restoration Act of 1990[103] authorized the Corps to cooperate with other agencies and the state of Louisiana to identify and construct wetlands projects. "[E]cosystem protection and restoration" is now a relevant element in Corps watershed and river basin assessments,[104] and the agency may "carry out an ecosystem restoration and protection project" if it "will improve the quality of the environment and will be cost effective."[105]

Restoration is a profound challenge to the Corps that undercuts the very foundation of 200 years of national water management policies. Restoration posits that past hydrologic alterations that affected watershed, hydrologic, and geomorphologic processes must be reversed and, thus, is the focus for a significant shift in our attitudes toward water management. For the Corps,

98. NATIONAL RESEARCH COUNCIL, INLAND NAVIGATION SYSTEM PLANNING, *supra* note 3, at 32–49 (stating that Corps navigation traffic projections unwarranted).

99. U.S. ARMY CORPS OF ENGINEERS, USACE 2012, *supra* note 18, is a formal confession of error. It formally adopts the agency's principles of environmental protection and endorses a planning process that is collaborative and comprehensive.

100. *See generally* NATIONAL RESEARCH COUNCIL, RESTORATION OF AQUATIC ECOSYSTEMS, *supra* note 97.

101. 33 U.S.C. § 2316(a) (2001).

102. 33 U.S.C. § 2317 (2001).

103. Pub. L. No. 101-646, tit. III, 104 Stat. 4778.

104. 33 U.S.C. § 2267a (2001).

105. 33 U.S.C. § 2330(a)(1) (2001).

"physical integrity" directs it to restore patterns and timing of flows and geomorphic processes in our watersheds. Physical integrity means restoring the natural flows and pulses to our riverine (riparian) areas and strategically recreating wetlands-upland complexes in our watersheds. This said, restoration is as much an engineering problem as the traditional water development programs, and it extends to such matters as scheduling reservoir releases to better mimic historical flows.

B. Adaptive Management: Forcing the Corps to Practice Back-End Adjustment

The Corps' expanded stewardship and restoration missions require a new form of continuous management. The current analytical tool, if it can be called that, is adaptive management ("AM"). AM is part theology and part science. As an early proponent observed, with perspicacity, "[a]daptive management is not really much more than common sense. But common sense is not always in common use."[106] AM was developed in the late 1970s as a criticism of static or deterministic environmental assessment. Howard Raiffa's pioneering work in the 1960s on decision analysis,[107] which led to his famous decision trees—the basis of much private and public rational planning—was one of the major influences on the development of AM.[108] The basic argument was that "a fixed review of an independently designed policy"[109] was inconsistent with the experience of resource managers worldwide and with what has come to be called non-equilibrium ecology. The need for rigorous, but flexible, procedures to make decisions under conditions of uncertainty has a long intellectual pedigree.

AM remained primarily an academic construct until the Endangered Species Act ("ESA") emerged as a major barrier to a wide variety of private and public activities in the late 1980s and early 1990s. To prevent its roll back, the Clinton Administration's Department of Interior responded by promoting multi-species habitat management plans as a way to conserve species and allow continued land development.[110] AM emerged as a way to

106. ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT 136 (C.S. Holling ed., 1978). *See generally* CARL WALTERS, ADAPTIVE MANAGEMENT OF RENEWABLE RESOURCES (1986); PANARCHY: UNDERSTANDING TRANSFORMATIONS IN HUMAN & NATURAL SYSTEMS (Lance H. Gunderson & C.S. Holling eds., 2002).

107. HOWARD RAIFFA, DECISION ANALYSIS (1968).

108. *See* ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT, *supra* note 106. at 119 (recommending the Raiffa text, as a "good text[]" on applied decision theory).

109. ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT, *supra* note 106, at 1.

110. *See* Marc Ebbin, *Is the Southern California Approach to Conservation Succeeding?*, 24 ECOLOGY L.Q. 695 (1997) (discussing the Southern California experiment, which Ebbin predicted would weigh

push hard problems such as the risk of the future failure of a habitat management plan, far into the future. In the process, AM lost much of its initial theoretical rigor and coherence and came to stand for any action that had an experimental component, some monitoring, and called for changes in a conservation regime.

"True" AM, however, is a rigorous, continuous process of acquiring and evaluating scientific information,[111] which requires the practice of regulatory science and a necessary component of any successful restoration program. Regulatory science is science designed to answer, to the best extent possible, causal questions about management choices, such as the minimal viable population of an at-risk species, and is also designed to help formulate science-based, socially-desired outcomes. Regulatory science requires scientists to contribute to the establishment of standards that have both a normative and scientific component and then to devise ways to measure whether these standards are being met over time. For example, any effort to create past conditions requires baselines and performance targets. These are not strictly scientific questions because they require normative judgments about the value of the past and the extent to which we wish to try to re-create them.[112] Nonetheless, these decisions must be informed by science. The hope is that AM will permit decision makers to avoid the paralysis that scientific uncertainty creates. AM experiments are intended to reduce progressively the initial scientific uncertainty over time.

The Corps has formally embraced AM. The best example is the Corps' Master Management Plan for the Restoration of the Everglades. In 2000, Congress enacted the Comprehensive Everglade's Restoration Plan as part of the omnibus Water Resources Development Act.[113] The Everglades ecosystem depends on seasonal sheet flows of water from Kissimmee River in central Florida and Lake Okeechobee. To make South Beach what it is today, these flows were substantially diverted for agricultural and urban development and flood control. The objective of the legislation is to replumb the Everglades to restore some measure of pre-diversion flows.[114] The compre-

---

heavily into debates as Congress considered the then upcoming revisions to the ESA).

111. NATIONAL RESEARCH COUNCIL, DOWNSTREAM: ADAPTIVE MANAGEMENT OF GLEN CANYON DAM AND THE COLORADO RIVER ECOSYSTEM 52–54 (1999).

112. *See* A. Dan Tarlock, *Slouching Toward Eden: The Eco-Pragmatic Challenges of Ecosystem Revival*, 87 MINN. L. REV. 1173 (2003) for a more extended discussion of the problems of developing a science-based legal regime to structure restoration efforts.

113. 33 U.S.C. § 2201 (2001). *See generally* EVERGLADES: THE ECOSYSTEM AND ITS RESTORATION (Steven M. Davis and John C. Ogden eds., 1994); DAVID MCCALLY, THE EVERGLADES: AN ENVIRONMENTAL HISTORY (1999); Carl Walters, et al., *Experimental Policies for Water Management in the Everglades*, 2 ECOLOGICAL APPLICATIONS 189 (1992).

114. *See generally* U.S. ARMY CORPS OF ENG'RS & S. FLORIDA WATER MGMT. DIST., CENTRAL AND

hensive plan for the Everglades requires the continuous and adaptive use of science, including independent scientific review, so that "modifications will be made in the future based on new information."[115]

C. *Three (Among Many) Legal Issues Raised by the Practice of Adaptive Management*

1. Pre-Existing Entitlements

Adaptive management will be difficult for the Corps to implement in the many river systems that it now physically controls. To restore these systems, the agency must depart from clear historic mandates that have generated high expectations of the maintenance of the status quo. AM often exposes existing stakeholders (who sometimes, but not always, hold legal entitlements) to additional risks of diminished benefits. The elimination of historic entitlements often raises substantial taking issues under the Fifth and Fourteenth Amendments to the Constitution.[116] The drag of the status quo is illustrated by efforts to push the Corps to adopt AM on the Missouri River.[117] The Pick-Sloan plan turned an unruly river into a series of artificial lakes, which generated substantial flood control but marginal navigation benefits at the expense of lost ecosystem services and social equity.[118] The Corps has resisted AM, which would require new flow regimes that could disrupt navigation and increase downstream flood risks, in part because the Corps has statutory duties to protect downstream Missouri River communities from flood damage and to maintain a nine-foot navigation channel for a very

---

SOUTHERN FLORIDA COMPREHENSIVE REVIEW STUDY: FINAL INTEGRATED FEASIBILITY REPORT AND PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (1999), *available at* http://www.evergladesplan.org/pub/restudy_eis.cfm (last visited May 28, 2004); Michael Voss, Note, *The Central and Southern Florida Project Comprehensive Review Study: Restoring the Everglades*, 27 ECOLOGY L.Q. 751 (2000).

115. U.S. ARMY CORPS OF ENG'RS, I MASTER PROGRAM MANAGEMENT PLAN: COMPREHENSIVE EVERGLADES RESTORATION PLAN 6 (2000), *available at* http://www.evergladesplan.org/pm/pm_docs/mpmp/mpmp_final_000818.pdf (last visited May 28, 2004).

116. Tulare Lake Basin Water Storage Dist. v. United States, 59 Fed. Cl. 246, 266 (2003). *But cf.*, County of Okanogan v. Nat'l Marine Fisheries Serv. 347 F.3d 1081 (9th Cir. 2003) (not discussing any Fifth or Fourteenth Amendment takings issues).

117. *See generally* John H. Davidson & Thomas Earl Geu, *The Missouri River and Adaptive Management: Protecting Ecological Function and Legal Process*, 80 NEB. L. REV. 816 (2001). The Columbia River provides a depressing example of ineffective AM. *See generally* John M. Volkman & Willis E. McConnaha, *Through a Glass Darkly: Columbia River Salmon, The Endangered Species Act, and Adaptive Management*, 23 ENVTL. L. 1249 (1993).

118. *See generally* NAT'L RESEARCH COUNCIL, THE MISSOURI RIVER ECOSYSTEM: EXPLORING THE PROSPECTS FOR RECOVERY (2002) (tracing the history of the project, describing the environmental and social costs caused by damming the Missouri, and sets out restoration options).

small, and decreasing, amount of barge traffic.[119] Environmentalists argue that the Corps—which traditionally opposes judicial review on the ground that there is no law to apply—has discretion under its existing statutes or the Endangered Species Act. These arguments came to a head in the summer of 2003.

In 2003, the Corps decided to respond to a drought by releasing water from the largest reservoir in South Dakota, Lake Oahe, to maintain a nine-foot navigation channel downstream. South Dakota successfully sued to enjoin the release because a release would reduce the prey of a major reservoir sport fish, the walleye. The Corps then proposed to take the water from Lake Francis Case, lower on the system, but South Dakota obtained an injunction requiring the water levels to be maintained in both lakes through the spawning season. To prevent the Corps from moving upstream, North Dakota obtained an injunction to protect Lake Sakakawea. Nebraska, in turn, obtained an injunction requiring a water release. The Eighth Circuit ultimately held that the Corps was bound by its own Master Manual because the Corps was estopped from claiming that it was nonbinding.[120] The upstream states sued to protect an "exotic" sport fishery. The Missouri River also has two species of fish that need spring rises and two endangered birds.

In 2000, the Fish and Wildlife Service issued a Biological Opinion that recommended a spring rise every three years to benefit these species,[121] but this option was considered by the Corps and then dropped after extreme pressure from downstream navigation interests.[122] In 2003, however, the Fish and Wildlife Service engaged in more "political science" and issued a Supplemental Biological Opinion that found no jeopardy because "future operation will be consistent with the 2000 Biological Opinion." After the Eighth Circuit vacated the North and South Dakota injunctions, an environmental NGO convinced a District Court in Washington to require a spring rise, to preserve the pallid sturgeon and to limit summer flows to prevent the nests of least terns and piping plovers. The district court held that the Corps had the discretion to comply with the ESA, that compliance "can come at the expense of other interests," and that the 2003 Supplemental Biological Opin-

119. *See generally* MICHAEL W. BABCOCK & DALE G. ANDERSON, ENVIRONMENTAL DEFENSE FUND, DOES BARGING ON THE MISSOURI RIVER PROVIDE SIGNIFICANT BENEFITS? (1999), *available at* http://www.edf.org/documents/743_missouri.pdf (last visited May 28, 2004).

120. South Dakota v. Ubbelohde, 330 F.3d 1014, 1029 (8th Cir. 2003).

121. U.S. FISH & WILDLIFE SERVICE, BIOLOGICAL OPINION ON THE OPERATION OF THE MISSOURI RIVER MAIN STEM RESERVOIR SYSTEM, OPERATION AND MAINTENANCE OF THE MISSOURI RIVER BANK STABILIZATION AND NAVIGATION PROJECT, AND OPERATION OF THE KANSAS RIVER RESERVOIR SYSTEM (2000), *available at* http://www-mr.usacc.army.mil/mmanual/opinion.htm (last visited May 28, 2004).

122. Am. Rivers v. United States Army Corps of Eng'rs, 274 F. Supp. 2d 62, 65–66 (D.D.C. 2003) (civil contempt).

ion was inconsistent with the ESA because it was likely that it had no reasonable chance of occurring. Eventually, the cases were transferred to a district judge in Minnesota under the complex litigation transfer procedure, and the judge held that the agency must comply with the ESA. *American Rivers* was an easy case because the crucial scientific document carried its own death wound. The court found that the FWS has failed to articulate any reasonable explanation for its departure—not to say abandonment of the analysis contained in the 2000 Biological Opinion.

The story continues as downstream navigation interests have no incentive to compromise. The Bush II Administration tried to solve the problem by redoing the science, but it did not totally solve the problem in the process. The Fish and Wildlife Service was ordered to review the 2000 Biological Opinion, and an outside team of scientists was brought in to perform the review. The team basically agreed with the previous opinion that a spring rise and summer low flow were necessary to protect the pallid sturgeon.[123] However, the Corps continues to resist any flow release pattern that threatens to disrupt navigation, and a federal district court has held that the Corps has the discretion to consider ways to comply with the ESA other than seasonable flow adjustments.[124]

2. A Hard Look at What?

AM will be difficult for courts to supervise because it does fit the preferred model of a final, rule-based administrative decision supported by a record. The legal consequences of this are significant because it presents a set of legal problems different from the usual administrative law ones. The great project of modern administrative law has been to cabin the exercise of agency discretion. Although the Supreme Court has virtually refused to use the delegation doctrine as a control mechanism,[125] it has shown great, if wildly inconsistent, enthusiasm for the general project.

There is much talk of alternatives to rule-based regulation, but the application and formulation of rules remain the bedrock of administrative regula-

123. U.S. FISH & WILDLIFE SERVICE, AMENDMENT TO THE 2000 BIOLOGICAL OPINION ON THE OPERATION OF THE MISSOURI RIVER MAIN STEM RESERVOIR SYSTEM, OPERATION AND MAINTENANCE OF THE MISSOURI RIVER BANK STABILIZATION AND NAVIGATION PROJECT, AND OPERATION OF THE KANSAS RIVER RESERVOIR SYSTEM (2003), *available at* http://www.fws.gov/feature/pdfs/FinalBO.pdf (last visited May 28, 2004).

124. In re Operation of the Missouri River System, 2004 WL 1402563 (D. Minn. June 21, 2004). See Sandra B. Zellmer, *A New Corps of Discovery for Missouri River Management*, 83 Neb. L. Rev. 401 (2004) for a discussion of the continuing search for effective environmental management of the river.

125. *See* Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 472 (2001).

tion and create the basis for judicial control. Separation of powers principles require that courts intone the deference formula. Since the 1970s, the real judicial standard has been the "hard look" doctrine.[126] The underlying assumption behind the "hard look" judicial standard is that the agency will engage in a rational process to reach a final decision, explain it in a form as coherent as a B-plus appellate opinion, and that the process of the decision and the explanation can be sufficiently understood by a court to check it against the appellate opinion model of coherence and consistency with the "evidence." The "hard look" doctrine opened the whole area of informal, or non-adjudicatory, non-rulemaking action to judicial review. *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*[127] appeared to abandon the project, but the Supreme Court has recently recognized that there is a role for judicial review of agency policymaking.[128]

It is hard to apply the "hard look" doctrine to traditional Corps activities because the Corps' interpretations of their management mandates enjoy a high, but not unlimited, level of deference.[129] Thus, it will be even harder to do to adaptive management in that context. The "hard look" doctrine assumes that there is a final record that can be examined. AM experiments will (or should) have a management plan, but the plan will evolve over a long period of time. It is hard for courts to review final, science-based decisions, like a pollutant standard, and AM poses greater challenges. AM science will be a series of hypotheses and "[t]he test *should* be whether the experiment is based on a reasonable hypothesis and not whether the desired positive result is certain or more likely to happen."[130]

Based on experience, the likelihood of holding agencies that practice hyper-rationality accountable is not promising. The primary decisions that

126. The term was first introduced by Judge Harold Leventhal in *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 851 (D.C. Cir. 1970), but the foundation of the doctrine is *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402 (1971). Professor Sidney A. Shapiro characterizes modern administrative law in terms of the 1960s "reformation," characterized by more open processes, and the inevitable "counter-reformation," which relies on hyper-rational front-end decision processes. Sidney A. Shapiro, *Administrative Law After the Counter-Reformation: Restoring Faith in Pragmatic Government*, 48 U. KAN. L. REV. 689, 984–90 (2000). He observes that the "hard look" doctrine has been a foundation of both the reformation and counter-reformation. *Id.* at 690.

127. Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837 (1984). *Chevron* established a two-tier standard for judicial review of agency regulations. If the statute clearly addresses the issue, review is de novo; if the statute is ambiguous, the agency's interpretation is entitled to deference. *See* Thomas Merrill & Kristin E. Hickman, Chevron*'s Domain*, 89 GEO. L.J. 833 (2001).

128. Christensen v. Harris County, 529 U.S. 576 (2000); United States v. Mead Corp., 533 U.S. 218 (2001). *See* Charles H. Koch, Jr., *Judicial Review of Administrative Policymaking*, 44 WM. & MARY L. REV. 375 (2002) (asserting the difference between judicial review of statutory interpretation and review of administrative policymaking).

129. *E.g.*, ETSI Pipeline Project v. Missouri, 484 U.S. 495 (1988).

130. Davidson & Geu, *The Missouri River and Adaptive Management*, *supra* note 117, at 859.

the Corps has made historically consider whether a recommended project has a positive benefit-cost ratio.[131] The Corps has a long history of inflated and methodologically unsound benefit-cost analysis techniques, but accountability can occur only when the press or a neutral group "spotlights" the inflation. After the passage of NEPA, courts held that some discussion of costs and benefits had to be included in an EIS.[132] This first step was extended to an increased willingness to probe the merits of a benefit-cost ratio.[133] However, they soon retreated,[134] except in rare cases where the ratio is per se flawed, thereby inflicting its own death wound.[135] The refusal to probe all but the most flawed ratios is correct because the Constitution does not require that the Congress fund only projects with a positive benefit-cost ratio.[136] However, as the cases discussed in Section V.B indicate, courts can use paper trails to review on-going management and planning processes.[137]

3. AM Increases the Risk of Excessive Politicization of Corps Activities

The Corps is no stranger to politics. As a recent historian of the Corps wrote:

> The Corps, try as it might, could never escape the fact that army engineering was often the political science that forced builders into complex disputes. Engineers considered themselves tough-minded problem solvers,

131. The requirement dates to the Flood Control Act of 1936, which requires that Congress should undertake flood control works "if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected." 33 U.S.C. § 701a-1 (2001).

132. *E.g.*, Montgomery v. Ellis, 364 F. Supp. 517 (N.D. Ala. 1973) (discussing necessity of setting forth cost and benefit factors in an EIS).

133. *See generally*, Envtl. Def. Fund v. Froehlke, 368 F. Supp. 231 (W.D. Mo. 1973), *aff'd sub. nom.* Envtl. Def. Fund v. Callaway, 497 F. 2d 1340 (8th Cir. 1974); Sierra Club v. Froehlke, 359 F. Supp. 1289, 1362–81 (S.D. Tex. 1973), *rev'd on other grounds sub nom.* Sierra Club v. Callaway, 499 F.2d 982 (5th Cir. 1974).

134. *E.g.*, Trout Unlimited v. Morton, 509 F.2d 1276 (9th Cir. 1974) (NEPA does not require an EIS to include a benefit-cost ratio). Courts have occasionally suggested that it could review a benefit-cost ratio if Congress would be misled by an erroneous calculation, S. Louisiana Envtl. Council, Inc. v. Sand, 629 F.2d 1005, 1013 (5th Cir. 1980), but courts have not applied this standard.

135. The leading case is *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437 (4th Cir. 1996), where gross rather than net recreational benefits were calculated when study specifications required calculation of net benefits. On remand, the court approved the redone ratio. Hughes River Watershed Conservancy v. Johnson, 165 F.3d 283 (4th Cir. 1999).

136. United States v. 531.13 Acres of Land, 366 F.2d 915 (4th Cir. 1966); United States v. W. Virginia Power Co., 122 F.2d 733 (4th Cir. 1941), *cert. denied*, 314 U.S. 683 (1941).

137. I am indebted to Professor Jody Freeman of UCLA for pointing out that the lack of a complete record does not preclude effective judicial review.

> men who cut through conjecture by staying true to the facts. Congress, however, increasingly relied on the builders to speculate, negotiate, bridge political conflicts, and use engineering in ways never discussed at West Point.[138]

The Corps has had a schizophrenic attitude toward the politics of pork. On the one hand, they have embraced it as a way to sustain itself. On the other, the agency has always prided itself on its ability to perform sound, independent project analysis, which naturally weeds out rotten pork. In recent years, the agency's ability to ride the tiger and to preserve a measure of independence has been undermined by two related developments: cost sharing and the focus on collaborative watershed management.

Cost sharing shifts some of the costs of a Corps project from the federal treasury to the local beneficiaries, although it can be waived in appropriate instances.[139] Non-federal beneficiaries of Corps projects had long bourne some of the costs of project construction on an ad hoc basis, mainly in the form of land and easement transfers and dredged material disposal areas. In the 1970s, momentum for increased Corps fiscal discipline began to build. A coalition of fiscal conservatives and environmentalists agreed that formal cost-sharing was a desirable Corps reform because it would eliminate projects of marginal value. The 1986 Water Resources Development Act adopted cost-sharing and also authorized a backlog of delayed projects.

Ironically, cost-sharing has increased the power of local sponsors and their Congressional representatives to influence project selection and design. Thus, the Corps' influence in the traditional iron triangle has been diminished. Numerous studies have observed the close relations among the Corps, members of Congress, and local project proponents, to the exclusion of the executive branch[140] and the general public.[141] The assumption was that the

---

138. *Id.* at 122.

139. In brief, cost-sharing is based on ability to pay, and the Secretary of the Army may vary the formulas for structural and non-structural flood control measures and for agricultural water supply projects. For example, for harbor projects, construction cost-sharing increases with the harbor depth. Operation and maintenance cost-sharing reverses the equation. Shallow harbors must pay 100 percent of the costs but deep-draft harbors need only pay a maximum of fifty percent of these costs. The cost sharing rules for structural flood control require a minimum twenty-five percent land, material and a minimum five percent cash contribution from local sponsors. Non-structural flood control measures have a separate cost-share formula; they must either contribute twenty-five percent of the cost in land, cash, easements, disposal sites or make up the difference. Inland navigation projects remain 100 percent federally financed but the federal share is evenly split between general revenues and the user fees.

140. For an analysis of the executive branch's consistent struggle to incorporate efficiency considerations into environmental policy, see RANDALL LUTTER & JASON F. SHOGREN, PAINTING THE WHITE HOUSE GREEN: RATIONALIZING ENVIRONMENTAL POLICY INSIDE THE EXECUTIVE OFFICE OF THE PRESIDENT (2004).

141. *See, e.g.*, JOHN A. FEREJOHN, PORK BARREL POLITICS: RIVERS AND HARBORS LEGISLATION,

Corps was either in control of the process or an equal partner. Cost-sharing often makes the Corps simply the implementation agency for decisions taken by the project sponsors and members of Congress. At a minimum, it is harder for the agency to exercise its traditional independent review function. Cost-sharing has also narrowed the geographic scale of Corps planning at a time when many are asking it to expand planning to a watershed or river basin scale.

Cost-sharing has fundamentally changed the traditional iron triangle—Congress, the Corps, and the local beneficiaries—by creating more of a pincher. The Corps' rational planning process has been compromised because cost-sharing makes local sponsors and their Congressional representatives more powerful than the Corps. Cost-sharing has eliminated some marginal projects and some with high environmental costs. However, it has contributed to the fragmentation of Corps authority in two important ways. First, it has kept alive or revived "legacy" projects—controversial projects that had been shelved by the 1986 cost sharing reforms and by Washington level reviews. However, a series of actions in the mid-1990s that relaxed the review of project justifications and that relaxed cost sharing requirements for these selected projects allowed these legacy projects to regain momentum. Second, local project sponsors have few incentives to link projects to a larger watershed perspective, for example.

Stakeholder collaboration is an alternative to traditional command and control regulation and the informal agency decision making long practiced by the Corps.[142] The agency is increasingly asked to come "reason together"[143] by participating in both large and small scale watershed governance processes. These processes can both encourage large-scale comprehensive solutions and require the Corps to share its decision making authority with stakeholders.

In the 1990s, the buzzword in water management was watershed planning, and it continues to be the primary objective of federal and state water agencies, including the Corps.[144] There are numerous large and small water-

---

1947–68 (1974); MAASS, *supra* note 44.

142. See THOMAS M. KOONTZ ET AL., COLLABORATIVE ENVIRONMENTAL MANAGEMENT? WHAT ROLES FOR GOVERNMENT? (2004), for a close look at the role of public participants in collaborative processes. *See also* Mark Seidenfeld, *Empowering Stakeholders: Limits on Collaboration as the Basis for Flexible Regulation*, 41 WM. & MARY L. REV. 411 (2000).

143. The quotation, "*Come now, let us reason together, says the LORD: though your sins are like scarlet, they shall be as white as snow; though they are red like crimson, they shall become like wool*," is from Isaiah 1:18 and was frequently invoked by the late President Lyndon B. Johnson to support civil rights legislation.

144. *See* J.B. Ruhl et al., *Proposal for a Model State Watershed Management Act*, 33 ENVTL. L. 929, 930–33 (2003) (discussing the importance the Corps, the Environmental Protection Agency, and at least

shed initiatives underway in the United States. Some are simply information sharing fora, and others seek to solve specific physical and regulatory problems by using consensus among stakeholders to secure government and private approval of specific programs that meet federal and state regulatory objectives. Watershed planning is a smaller scale version of the Conservation Era principle that river basins should be viewed as planning and management units. The "scaled-down" version of the dream of hydrologic rationality is both a reflection of the bankruptcy of earlier central river planning efforts and of the limits of command and control regulation to address problems that do not lend themselves to a simple technological solution.

Water resources planning was "scaled down" and decentralized from the 1970s to the 1990s, along with the rest of the federal government. Earlier river basin commissions were dismantled and, eventually, were partially replaced by ad hoc efforts to address specific large river issues, primarily compliance with the Endangered Species Act.[145] From this smaller, watershed-level initiatives sprang up across the landscape to address modern issues, such as aquatic ecosystem restoration and the control of non-point source pollution in the absence of express federal legislation. As a substitute for actual management, many federal agencies including EPA, the Forest Service and the Corps have turned to the idea of watershed planning. The basic idea is to substitute stakeholder processes and voluntary agreements for top-down regulation. Watershed protection efforts must overcome fragmented, incomplete, and shared regulatory mechanisms existing, both among and within the three levels of government and to overcome the existing allocation of water and land entitlements. Thus, the geographic focus of legal regulation is inevitably narrow, and it is difficult for mission agencies to cross political and cultural boundaries and for units of government to cooperate and share power among themselves as well as the former regulated community, who are now characterized as "stakeholders."

---

twenty states place on watershed management policy).

145. *See* Joseph L. Sax, *Environmental Law at the Turn of the Century: A Reportorial Fragment of Contemporary History*, 88 CAL. L. REV. 2377 (2000) (detailing three cases where the needs of species listed under the Endangered Species Act have conflicted with other uses of numerous rivers).

V. SOME MODEST PROPOSALS FOR RULE OF LAW VALUES IN AN EXPERIMENTAL ENVIRONMENT

A. *Congressional Intervention Would Help*

One of the most frequent criticisms of the Corps of Engineers is that it is increasingly being asked to undertake multiple, potentially competing, missions with very little statutory guidance.[146] The Corps generally studies all aspects of the problem and the range of management options, but often it does not integrate the scientific research that addresses possible adverse environmental impacts and adaptive management options. Not surprisingly, the Corps frequently chooses a management option that least disturbs the status quo, usually navigation enhancement and flood control. The roots of the problem lie partially in the accretive, unintegrated legal structure under which the Corps operates.

The Corps is often portrayed by environmentalists as an unaccountable, "out of control" construction agency[147] or, in the alternative, as a chronically timid innovator. The reality is that the Corps is a highly accountable agency to its main constituencies, namely Congress and project beneficiaries. Paradoxically, this makes traditional judicial accountability almost impossible. The traditional model of agency accountability assumes a unified Congressional understanding of the agency's policy. Oversight committees then police deviations from adherence to the policy. In the post-modern political world, things are more complex. In a recent article, Professors J.R. DeShazo and Jody Freeman identify disturbing new administrative phenomena which they call disjointed majoritarianism and sub-majoritarianism.[148] In brief, coalitions of oversight committee members are able to subvert an unamended statute by tempering its specific application to specific geographical areas. The major problem is that agencies are not, as constitutional law would suggest, accountable to the formal mandate of Congress, but rather to individual members who reject the mandate. The Corps does not strictly fit this model because there is no uniform federal water policy, but the model highlights the fact that there may be other examples of undesirable, unanticipated forms of agency accountability.

---

146. *E.g.*, NAT'L RESEARCH COUNCIL, REVIEW OF THE U.S. ARMY CORPS OF ENGINEERS UPPER MISSISSIPPI-ILLINOIS WATERWAY RESTRUCTURED FEASIBILITY STUDY: INTERIM REPORT 12 (2004).

147. Christine A. Klein, *On Dams and Democracy*, 78 OR. L. REV. 641, 679–82 (1999), marshals the relevant literature for this view.

148. J.R. DeShazo & Jody Freeman, *The Congressional Competition to Control Delegated Power*, 81 TEX. L. REV. 1443, 1500–02 (2003).

To complicate matters, the Corps gives the illusion of a monolithic central agency. Formally, it is a unitary, military unit with a strong, central chain-of-command, but in reality, the Corps is a de facto federal institution. Over time, power has devolved to the local districts. The main reason is cost sharing. It has given local sponsors, local representatives, and senators a greater role in project selection, designs, and, most importantly, scope.

Congressional reform is especially needed because the Corps has long operated under a legal regime, agency practice, and culture that developed when there was little need to justify its mission or to defend itself in court. This regime worked quite well when the Corps needed only to fulfill its mission by planning and constructing a project and operating it to fulfill the original objectives. Congress never enacted organic legislation[149] for the Corps because there was no need for it. Instead, the agency's authority comes through individual congressional project authorizations and random grants of general authority. This legal regime is much like Chinese dynastic history: each new history is added to others and nothing is subtracted or integrated.[150] These conditions no longer hold today, and the legal regime that supports the agency has become increasingly dysfunctional as the agency increasingly finds itself being asked to respect or restore the natural hydrograph, to protect ecosystem services or values, and to manage these systems adaptively. There have been profound changes in social values since the 1930s and the 1940s, but Congress has never revisited the legislation from this era.

Congress need not micro-manage every project. Instead, it could give the Corps organic legislation, which would put the agency's new missions on a firmer legal footing than they enjoy today. The Corps has considerable discretion to innovate, but it views much innovation as potentially *ultra vires* because it is not explicitly grounded in the authorizing legislation statute and is potentially inconsistent with its primary missions.

---

149. I use organic legislation in the sense as it is understood in modern public land law. Robert L. Fischman, *The National Wildlife Refuge System and the Hallmarks of Modern Organic Legislation*, 29 ECOLOGY L.Q. 457, 503 (2002), defines public land organic legislation as "a charter for a network of public lands." As applied to the Corps, organic legislation would be a comprehensive charter that rationalizes all Corps activity.

150. The focus of this Article is on the problems of applying rule of law values to an experimental management and regulatory environment. It does not deal extensively with the question of the appropriate "density" of Corps laws and regulations. See J.B. Ruhl & James Salzman, *Mozart and the Red Queen: The Problem of Regulatory Accretion in the Administrative State*, 91 GEO. L. J. 757 (2003), for an analysis of the relationship between the density of regulation and compliance with the mandates of the regulatory regime. *See supra* notes 146–48 and accompanying text for a discussion of the difficulties that the Corps accretive regime causes for holding it accountable for the experiments that it is being asked to run.

B. *A Selective Hard Look at the Agency's Good Faith Efforts to Run a Credible AM Experiment*

The two most promising judicial control candidates for the post-modern Corps are the non-delegation doctrine and the hard look doctrine. Stakeholder participation raises the risk that public policy will be made by private individuals without the filter of the legislative process or administrative agency oversight.[151] Even the present formalist Supreme Court has not used the non-delegation doctrine to control administrative agencies.[152] However, the delegation of law making to private groups stands on a different footing.[153] Federal and state courts apply the non-delegation to a private party doctrine to delegations that permit agency abdication. For example, courts have applied the doctrine to federal land management agencies, which delegated authority to local resource users in a way that creates a substantial risk that federal management duties, such as biodiversity conservation, will be compromised.[154]

A selective hard look at AM experiments is a more promising approach. Courts have been known to review planning exercises that involve AM, although challenges to AM are often embedded challenges to large-scale efforts to implement the Endangered Species Act through Habitat Conservation Plans (HCPs). The Clinton Administration pioneered a number of experiments to implement the ESA through Habitat Conservation Plans or other processes that promised multi-species protection on an ecosystem basis. These efforts are a high-risk effort to induce regulatory community participation by minimizing the risk of ESA enforcement. There is a tendency to use such processes and the glittering promise of AM to defer important regulatory choices that threaten to undermine the effectiveness of the plan. Courts have held that such plans are inconsistent with the mandates of the ESA, and have, in the process, distinguished between bona fide and faux AM.

---

151. *The Role of Collaborative Groups in Federal Land and Resource Management: A Legal Analysis*, 23 J. LAND RESOURCES & ENVTL. L. 67 (2003), is the most comprehensive treatment of this issue.

152. Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 472–76 (2001).

153. Carter v. Carter Coal Co., 298 U.S. 238, 311 (1936). Professor Jody Freeman is the most enthusiastic supporter of the principle of private delegation because it is a "fact of life." Jody Freeman, *The Private Role in Public of Public Governance*, 75 N.Y.U. L. REV. 543, 586 (2000).

154. *E.g.*, Nat'l Park & Conservation Ass'n v. Stanton, 54 F. Supp. 2d 7 (D.D.C. 1999); Natural Res. Def. Council, Inc. v. Hodel, 618 F. Supp. 848 (E.D. Cal. 1985). For a rationale for judicial intervention see George Cameron Coggins, *"Devolution" in Federal and Land Law: Abdication by Any Other Name*, 3 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 211 (1996).

The successful challenge to an ineffective plan in *Oregon Natural Resources Council v. Daley*[155] illustrates the ability of courts to weed out faux AM experiments. The case was a challenge to a state plan to save endangered Pacific coast salmon. The populations of evolutionary significant units (a relatively untested species grouping under the ESA) of coastal coho salmon have been declining due to a variety of anthropocentric and natural causes. The anthropocentric causes include timber harvest practices, livestock grazing, and water diversions. The decision of whether to list the coho as a threatened species under the ESA was a political football throughout the 1990s because protection and restoration required intensive public and private land use and water management. There is no quick technological fix and the reserve strategy applied to terrestrial fauna is not applicable. In 1997, the National Marine Fisheries Service withdrew an earlier proposal to list the coho and decided not to list the coho as threatened because the Oregon Coastal Salmon Restoration Initiative—which supplemented the Northwest Forest Management Plan adopted in 1994 to save the spotted owl—would reverse the population decline.

California units were listed, however, because the state apparently made a calculated political decision not to formulate a similar initiative. Scientific opinion within NMFS was divided on the effectiveness of the initiative and on the need to list the species. When the Oregon plan was challenged, a Magistrate Judge invalidated the decision not to list because NMFS applied the wrong ESA standard in its decision not to list. A species must be listed if it is likely to become extinct in the foreseeable future, but the Service only evaluated the effect of the initiative on population declines over a two year period. The primary flaw in NMFS' approach was to base its decision not on science, but on faith in future actions taken by the legislative and executive branches of Oregon. "NMFS . . . was unwilling to make the hard choice required by the ESA . . . ." Oregon's initiative relied in part on voluntary watershed councils where landowner participation was "largely voluntary," and NMFS had rejected California's action plan, in part, because the state had not funded a paper watershed initiative and landowner participation was voluntary. This led to the conclusion that reliance on the state's initiative was arbitrary and capricious because it relied on unimplemented, largely voluntary future actions.[156] The Court found the agency's failure to explain

155. 6 F. Supp. 2d 1139 (D. Or. 1998).

156. A series of previous district court opinions held that the FWS could not rely on possible future management actions by other agencies. Biodiversity Legal Found. v. Babbitt, 943 F. Supp. 23 (D.D.C. 1996); Friends of the Wild Swan, Inc., 945 F. Supp. 1388 (D. Or. 1996). The Ninth Circuit held that the FWS could not excuse its duty to designate critical habitat for the California Gnatcatcher on an elaborate reserve system created under a voluntary state program. Natural Res. Def. Council v. U.S. Dep't of the

why Oregon's initiative did not pose the same risks as California's "telling" and concluded "[h]owever laudable Oregon's efforts to employ new management techniques to try to restore the Oregon Coast ESU, such future voluntary conservation effort cannot be a substitute for listing."[157]

Judge David Levi's review of an HCP for an area north of Sacramento equally provides a model of when and how courts need to intervene in a long-run experiment with an important AM component.[158] A proposed HCP obligated a multi-jurisdictional agency, the Natomas Basin Conservancy, to assemble several connected blocks of land funded by development fees. The pay-off for the plan was a Fish and Wildlife Service Biological Opinion, which would issue umbrella incidental take permits to several local governments and water districts. Any large HCP must balance immunizing immediate development from a section 9[159] taking suit with a plan that will conserve multiple species for the long run. To do this, the plan has to make crucial assumptions. The Natomas Basin Plan's assumption were (1) only about a third of the basin would in fact be developed and (2) future threats to the species' continued survival and development that took place around the reserve system could be minimized through aggressive adaptive management.

The National Wildlife Federation challenged the basic theory that the Incidental Take Permits could proceed as a complete plan based on extensive scientific research and thus challenged the plan's reliance on AM to correct any errors in the initial scientific assumptions. Specifically, it argued that the Plan must estimate the number of species and the number that will be taken. The court brushed this aside by holding that the HCP must meet the minimum statutory requirements under the *Chevron* deference standard.[160] Plaintiffs also challenged the Service's projection (speculation) that only 17,500 acres of the basin would be developed and the consequent conclusion that a combination of reserve and retention of agricultural land would be sufficient to protect the covered species. These were found to be within the Service's expert discretion because they concerned "the uncertainties inherent in the market-based mitigation mechanism employed by HCP"[161] and

---

Interior, 113 F.3d 1121 (9th Cir. 1997).

157. Oregon Natural Res. Council v. Daley, 6 F. Supp. 2d 1139, 1159 (D. Or. 1998).

158. Nat'l Wildlife Fed. v. Babbitt, 128 F. Supp. 2d 1274 (E.D. Cal. 2000).

159. Section 9, 16 U.S.C. § 1538(a) (2001), prohibits public and private parties from taking a listed species. *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687 (1995), holds that the Department of Interior may define a taking as habitat modification. The limits of this discretion have not been defined. Justice O'Connor's concurring opinion argued that there must be proximate cause between the destruction and an increased risk of species loss.

160. *Babbitt*, 128 F. Supp. 2d at 1291.

161. *Id.* at 1298.

were, therefore, an inevitable part of the complicated decision making that led to the HCP.

Judge Levi did not invalidate the key risk assumptions behind the plan and AM; instead, the court zeroed in on the weakest deals, which placed limits on the future use of AM. These included the disconnect between a regional plan and the lack of regional responsibility and the Department's inability to nail down adequate funding.[162] First, the court invalidated the Service's conclusion that the amount of the mitigation fee would be sufficient to acquire the necessary habitat because it was unsupported by substantial evidence and, therefore, arbitrary. Administrative purists may object to combining an adjudicative and rule making or informal decision standard, but the court, in effect, enforced the Supreme Court's *Nolan-Dolan* standard, which requires that land exactions be based on a reasonable showing of need and that the exaction is proportionate to the need generated by the land use activity.[163] By failing to demonstrate compliance with the standard, the Department of Interior may have over or underestimated the necessary level of exaction. Likewise, the court held that the Department could not issue a permit after the city refused to assume financial liability for the implementation of the plan.[164]

The Service's willingness to go ahead without an adequate funding mechanism also extended to its willingness to approve a regional HCP premised on the participation of only one public actor, the city of Sacramento, when, in fact, the success ultimately depends on multi-jurisdictional cooperation. This was fatal for several reasons, including the failure to discuss the effect on the reserve and corridor design if only the city participated in the plan. In short, the Service's failure to consider whether the survival of the species will be put at risk by the City's permit, if the regional mitigation approach of the HCP is not available, is arbitrary and capricious."[165]

---

162. *See* John Kostyack, NWF v. Babbitt*: Victory for Smart Growth and Imperiled Wildlife*, 31 ENVTL. L. REP. 10712 (2001); *see generally*, William Rodgers, *The Myth of Win-Win: Misdiagnosis in the Business of Reassembling Nature*, 42 ARIZ. L. REV. 297 (2000).

163. Nollan v. Cal. Coastal Comm'n, 483 U.S. 825 (1987); Dolan v. City of Tigard, 512 U.S. 374 (1994).

164. *Babbitt*, 128 F. Supp. 2d at 1298–99.

165. Round Two of the litigation has begun. In 2004, the National Wildlife Federation filed a second suit alleging that the revised plan had the same flaws as the original. Harold Kruger, *Natomas Plan Sparks Lawsuit*, THE MARYSVILLE APPEAL-DEMOCRAT, March 25, 2004.

V. CONCLUSION

The Corps has at least four options to adapt to the changing United States water policy environment it faces: (1) limp along with the status quo and increasingly become the project manager for individual members of Congress; (2) return to the go-go years of project construction, today primarily for water supply needs and for additional flood control, as some members of Congress and state water officials ardently desire;[166] (3) promote the incremental improvement of its rational methods with modest supplementation such as peer review; or (4) reinvent itself as a restoration agency. The fourth option would serve the national interest in sustainable water use. Legal accountability must come through a combination of a new legal structure for the Corps, limited judicial control, new internal checks, such as peer review,[167] and an agency embrace of the need for more experimental water management strategies.

166. FRESHWATER SUPPLY, *supra* note 14, reports that two states, Colorado and South Carolina, expected statewide shortages, sixteen states across the country expected regional shortages, and eighteen expected local shortages. Increased federal funding for storage and distribution capacity was the first priority among those surveyed.

167. *See generally* NATIONAL RESEARCH COUNCIL, REVIEW PROCEDURES FOR WATER RESOURCES PROJECT PLANNING (2002). The uses and abuses of peer review are discussed in J.B. Ruhl, *Prescribing the Right Dose of Peer Review for the Endangered Species Act*, 83 NEB. L. REV. (forthcoming 2004).